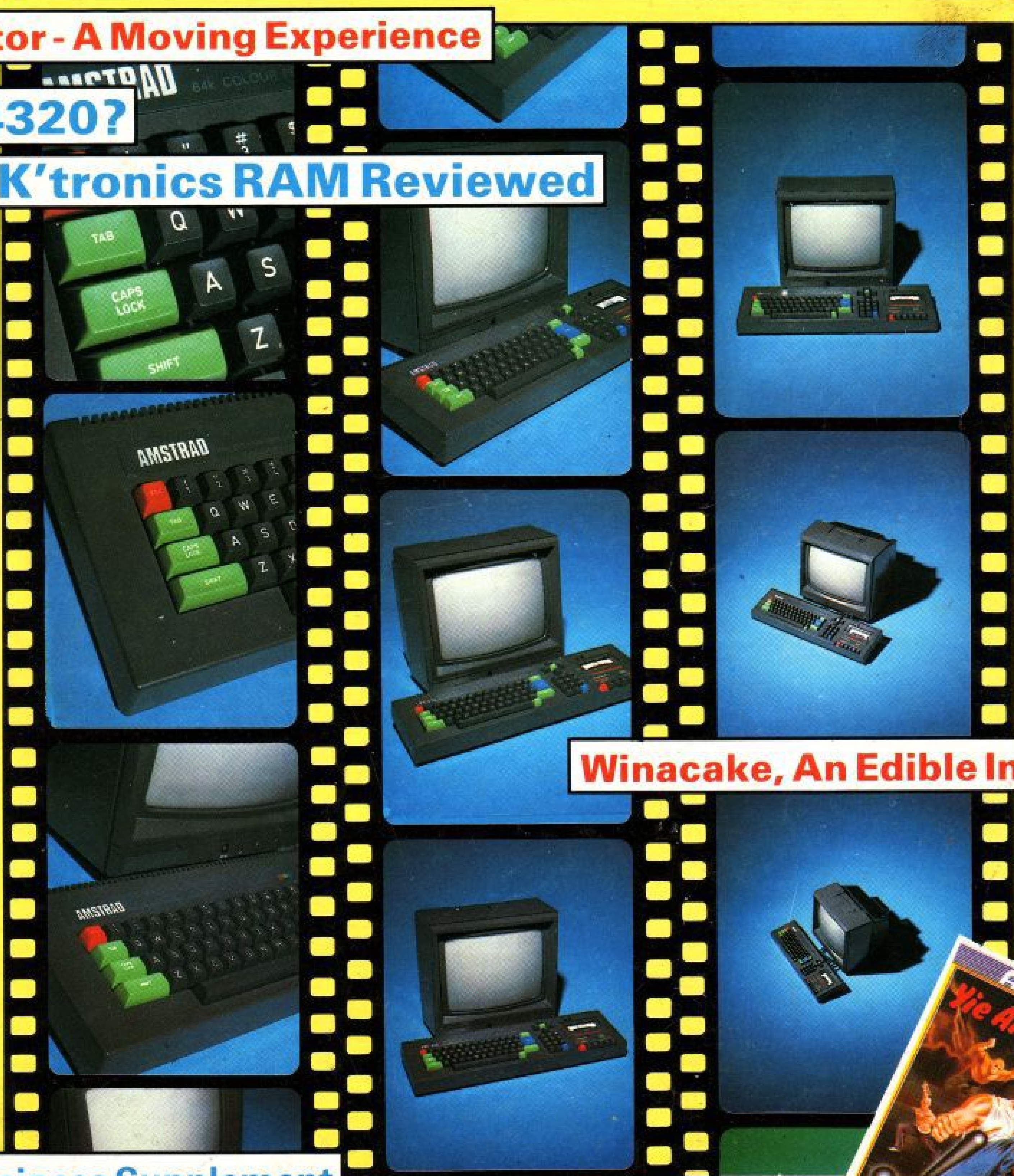
February 1986 95p

AMSTRAD COMPUTER USER

Animator - A Moving Experience

CPC 4320?

The DK'tronics RAM Reviewed



Winacake, An Edible Incentive

Free Business Supplement

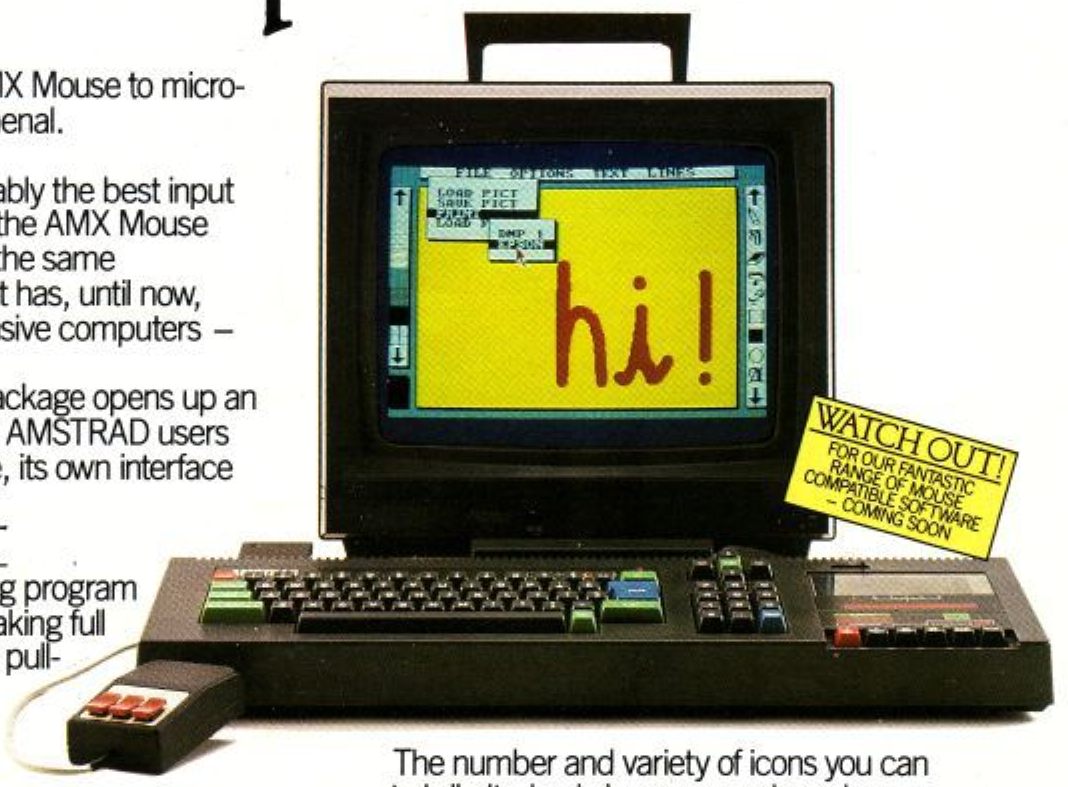
Write Your Own Game

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Game of the Month

We thought it was about time we put you in the picture.



When we introduced our AMX Mouse to micro-users, the response was phenomenal.

And no wonder!

Hailed by the press as 'probably the best input device that has arrived recently', the AMX Mouse brings to AMSTRAD CPC users, the same sophisticated, positive control that has, until now, been the province of more expensive computers – like the Macintosh.

The fantastic AMX Mouse Package opens up an entirely new and exciting world to AMSTRAD users and comes complete with Mouse, its own interface and these fabulous programs.

AMX ART

This computer aided, drawing program has to be seen to be believed. Making full use of on-screen windows, icons, pull-down menus and pointers, you'll be simply astonished at the quality of work you can produce, store and print. There is even a pattern design program which gives you an unlimited number of designs for use in your own drawings.

It's a program that can give hours of family fun and at the same time is ideal for serious professional applications.

AMX CONTROL

Now you can create a 'Mouse' environment in your own programs, AMX Control adds extra commands to normal Basic and features two programs.

1. The machine code program to extend the Basic interpreter which gives you full use of windows, icons and pointers.
2. An Icon designer, an individual program for creating and storing icons for use in your own programs.



FOR INSTANT ACCESS OR VISA ORDERS RING (0925) 602959/602690

The number and variety of icons you can create is limited only by your needs and imagination.

This fabulous AMX Mouse Package costs only £69.95, a price as remarkable as the package itself and it includes a fully illustrated operating manual.

The software is supplied on cassette, and 3" Disc. The AMX Mouse Package is compatible with Amstrad CPC 464, CPC 664 and CPC 6128.

Ordering couldn't be easier.

This superb package is available from all good computer dealers or direct using the freepost order form below.

So what are you waiting for?

Get into the picture now!

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PROSOFT

BUSINESS SOFTWARE

FOR THE AMSTRAD CPC 464/128 ON DISC OR CASSETTE

NON VAT ACCOUNTS

Other features of the system include:

Account Code Enquiry
This allows the user to access existing accounts by either account name or account code.

Amend Account Details

Account Code and Account Name
Letter codes are used to designate account types. This allows the computer to analyse transactions into specified groupings such as Assets, Trade Purchases, Sales, Overheads, etc.

MAILING LIST

Essential Features of the System Include:

Storage of up to three name fields, up to five address fields, telephone number and group code.

Full manipulation of data.

Analysis of all data using six group codes.

Search facility, even if only part of the field is known.

Label printing in any desired format, together with supression of group code and/or telephone number.

CASHCALC

Features of the package are as follows:

Cash flow forecasts are made simple.

Profit forecasts can be produced.

The forecasts can be used to assess the viability of cash flows from investment and consequently play a major part in assessing the viability of investment decisions.

Input data can be manipulated and changed.

Up to eighty analysis fields of income and expenditure are available.

Data can be printed in the form of an income/expenditure cash flow.

Period one data can be automatically removed at close of period.

SALES LEDGER

The programs are designed for use with or without VAT.
A printer is essential.

SALES LEDGER	SALES REPORTS
Invoices	Statements
Cash receipts	Ledger control account
Credit notes	Day book listing
Journals	Name and address file
Entry corrections	Aged debtor analysis
New customers	Customer credit limit file
	Customer details

PURCHASE LEDGER

The programs are designed for use with or without VAT.
A printer is essential.

PURCHASE LEDGER	PURCHASE REPORTS
Cash payments	Remittance advices
Invoices	Ledger control account
Credit notes	Day book listing
Journals	Name and address file
Entry corrections	Aged creditor analysis
New suppliers	Supplier credit limit file
	Supplier details

STOCK CONTROL

The programe incorporates the following facilities:

Create/Add to stock records.

Stock review.

Customer quotations.

Stock reordering.

Supplier details.

Amend routine.

Stock evaluation.

Minimum and maximum stock levels - an audible warning is given when either parameter is broken.

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Stock receipt - automatically updates stock records on receipt of goods.

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SOFT-5015 Issue 15 February 1986

AMSTRAD COMPUTER USER

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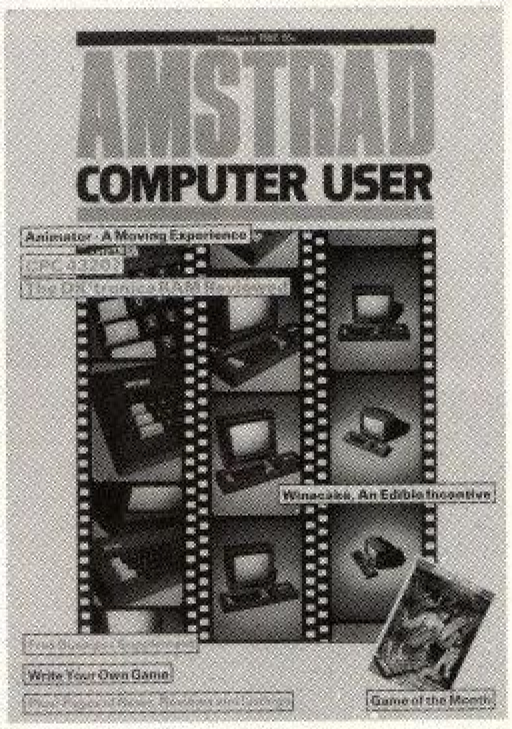
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Programs

Reviews

Amstrad Business Computing

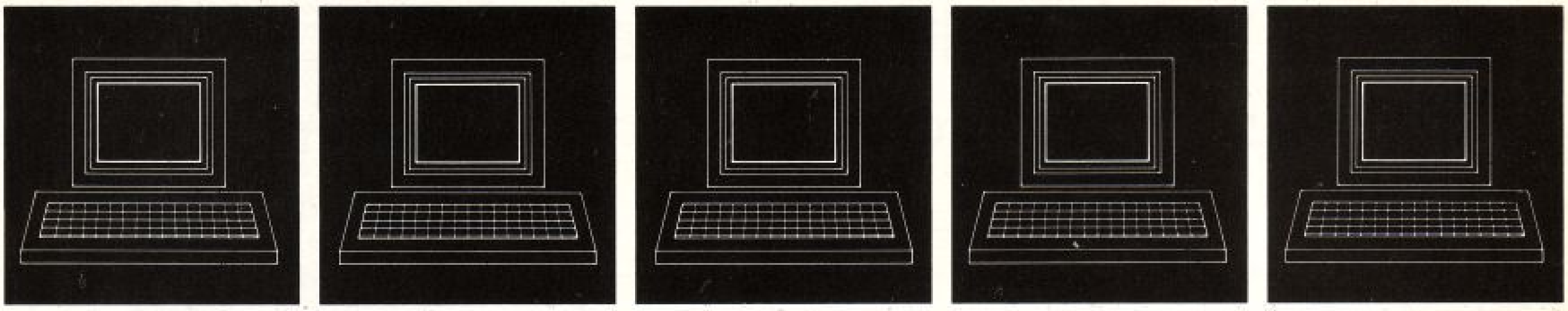
Amstrad User is the OFFICIAL magazine for users of the Amstrad CPC 464/664 and CPC6128, PCW8256. It is published monthly, the next issue will be on sale from February 12th 1986. Back issues are available from Amsoft Mail Order at £1.20 each (including postage). Issues 1, and 2 are sold out. Overseas readers should contact Garwood Wholesale (0245) 465 007

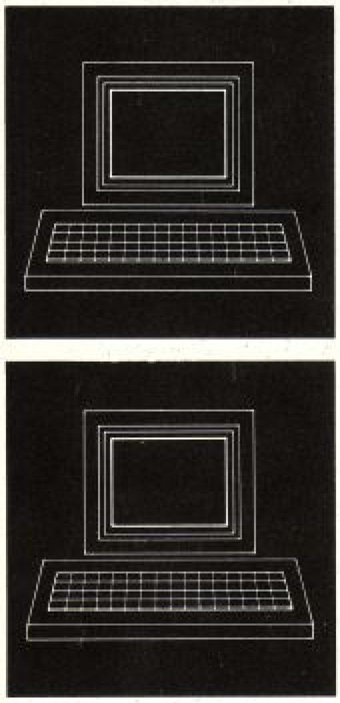


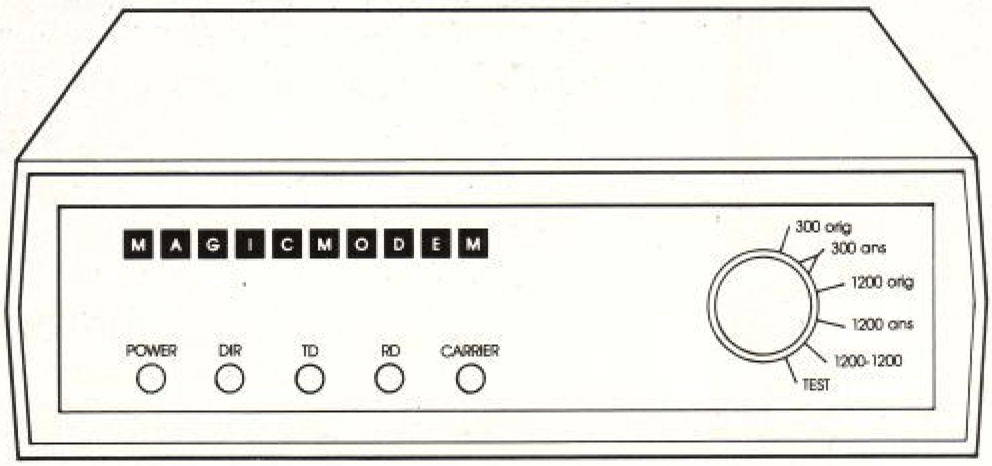
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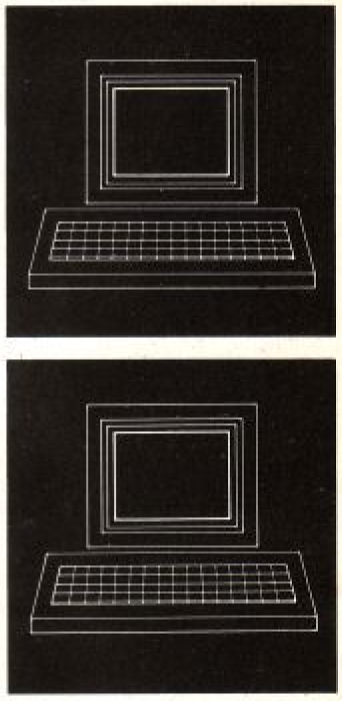
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M O D E M

User News...

Back to the future

If you have been to see the film 'Back to the future' you may be pleased to know that there will shortly be a computer game to complement the film.

In the film, Marty the teenage hero of the story, unintentionally travels back in time to 1955 where he meets his parents and unknowingly prevents them from meeting, thus endangering his own existance. To save himself from never existing he must get his parents together again and then get back to the future. Getting back is a bit difficult, each trip in his super dooper time travelling car takes one plutonium isotope. The snag is, Marty brought no plutonium with him and it is a bit difficult to get hold of in the 1950s. Therefore he must use a lightning bolt to generate the power necessary to send him back. Tricky huh?

Electric Dreams Software hope to release the Commodore version of the game in January with an Amstrad version later on. If it turns out to be half as good as the film, it should be pretty good.

Will Alan be recognised?

Amstrad has been nominated for some of the Recognition of Information Technology Achievement awards ('RITAs'). The RITAs will be dished out as usual at the Which Computer? Show in January. Amstrad are in the running for Business Computer System of the Year with the PCW8256. Alan Sugar is a finalist in the Personality of the Year category where he has impressed the judges with his desire to make information technology accessible to all. Just think if the computer wins and the man doesn't get the award it will be a case of Joyce outshining the boss.

Amstrad Go Stateside

When the CPC464 was lauched Alan Sugar was applauded for his decision not to market the first Amstrad computer in America. The computers proved to be so popular that Indescomp wanted to test the water for sales in the US. They did this with the 6128 which has only just gone on sale due to delays in getting FCC approval. Amstrad are now going to set up an American office to oversee sales of the PCW 8256. Initially Joyces (PCW 8256es) will be sold by Sears World Trade, a division of the huge Sears-Robuck company. The Amstrad office will be located in Chicago manned by Chris Pullen, a long serving member of the UK Amstrad staff.

Here Now

Lots of new software releases have crunched through our letter box and bounced on the doormat this month. We'll be giving them the once over and letting you know what we think of the best ones next month. Just to give you an idea of what is in store, here are some brief notes about the games.

Zorro from US Gold is a ladders and platforms game in the same vein as Bruce Lee. The idea of the game is to negotiate the many screens solving the puzzles along the way, in order to save the Senorita from the clutches of the Captain of the guard.

Spitfire 40 is the latest flight simulator, from Mirrorsoft. It allows you to fly a Spitfire in the Battle of Britain. Three game modes are provided; flying practice, combat practice, and combat. We have just heard that Amsoft intend to sell Spitfire 40 on disc.

The War Game from Reelax Software is a simulation of battle in the 'horse and musket era'. Commanding cavalry, infantry, engineers and artillery you move your units around the battlefield.

TLL (Tornado Low Level) is the latest blockbuster from Vortex. It features some great scrolling screens and proved so distracting in the office that we had to switch it off to get some work done.

Lord of the Rings makes its way to the Amstrad this month, with the release of the first part of the trilogy. Melbourne House hope to follow up the successful Hobbit with this mammoth game.

Winter sports is the very seasonal title of this release from Electric Dreams. The game has a format similar to other sporting simulations where one event is held after another. Skiing, Bobsleighing and the Biathalon are all included.

Spellbound is written by the same author as Finders Keepers for Mastertronic. It has all the trendy ingredients of menus, icons and windows. As with all Mastertronic games it looks to be very good value for money.



Bail Bar Meets Fast Bowler



Citizen are a new name to the home micro market, but they have started to make a good impression. The photograph shows Robin Marriott of Citizen Europe give a cheque for £2000 to cricket ace Ian Botham. The money will go towards Leukaemia Research, a charity close to Mr Bothams heart - and feet, as he walked from John O' Groats to Lands End, raising money.

'Bonjour' to the AMX Mouse

British Mice are currently launching an invasion of France with scant regard for immigration or quarantine laws. And it's all thanks to AMX.

Not the furry little creatures but those opto mechanical devices beloved of UK computer buffs. AMS, who make the AMX mouse for the CPC range have shipped 5,000 of the wee beasties to France. As with the UK version the French mouse includes AMX Art, a computer aided drawing program utilising on-screen windows, icons, pull-down menus and pointers for producing professional standard drawings. It also comes with a pattern designer, AMX control (whatever that is) and an Icon designer. "We feel the French have shown remarkably good taste in choosing our mice," says Nick Pearson. "Mind you it's only fair when you consider how much of their wine we drink (hic)."

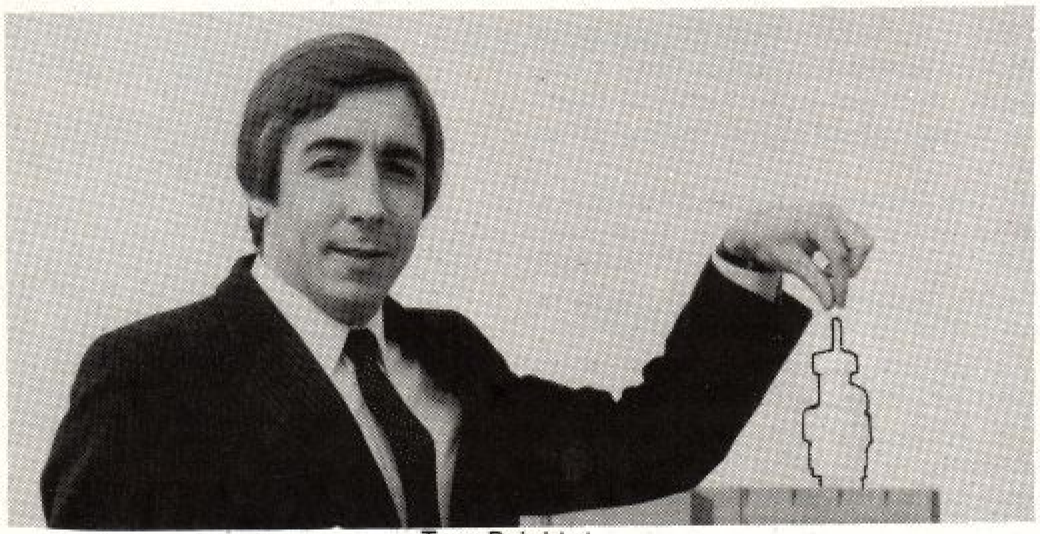
Price Plummet

Compsofts' Delta a relational language which used to cost over £500 is now available for the 6128 and Joyce to run under CP/M plus. Delta has an excellent reputation in the business world, it has an excellent manual and is known as the program which put Compsoft on the map. There are very few people who will want to spend that kind of money on software for a £400 system so NewStar have cut the price to £99. This brings a truly flexible database within the reach of many small businesses and organisations.

A program which is much more fun, and a bit cheaper is the Infocom adventure 'The Hitchhikers Guide to the Galaxy'. The game runs on all disc based Amstrads. This is available form Newstar and costs £24.95. The Editor is hooked on it, despite the problems he has when he materialises inside his own brain. You can contact NewStar on (0277) 220573 or 'phone through an order on (0277) 213218

The Wings Are Spread

Firebird, the software house owned by British Telecom, has split in two. The ex-boss of Firebird has set up his own label within BT. The new label is called 'Rainbird' after the boss, Tony Rainbird. The first Amstrad title will be the OCP Art Studio, this is a drawing package which has already been a hit on the Spectrum. Rainbird will concentrate on software which has something special about it. They will sell both utilities and state-of-the-art games.



Tony Rainbird

Hang it on the Telephone

Modems are getting better and cheaper all the time, the latest entrant in the modem stakes is the 'Magic Modem' from Datastar systems. This will cope with 1200/75 and



300/300 baud rates so that you can talk to both Prestel and Bulletin board systems. You can access British Telecom Gold at both these speeds. For direct data transfer you can use 75/1200 reverse Prestel and 1200/1200 half-duplex. Export models have both CITT and Bell tones

The modem has a host of bells and whistles, auto dialling allows you to build up a database of frequently called numbers and select them from software. Auto answer is available as an option.

The Magic Modem comes supplied with the excellent Honeysoft software and a serial interface. It is not yet BABT approved but approval is being sought. The modem costs £99.95 until Feb 28th when the price will rise to £115.

Discs Go Hard.

If you have a lot of data to store you need a big disc drive, you usually need to be able to access all the information very quickly. Northern Computers have a 20 Megabyte hard disk which should be enough to statisfy most users. The drive is called an 'Amstore' and does a lot more than store data. It can be expanded for use as a network, allowing users to share data files. There are facilities for file locking to prevent one user overwriting data which is being read by someone else. A printer can be shared by everyone on the network, a spooler stores documents waiting to be printed. If you need a lot of space for your data you can put up to 120 hard disks onto the network. You can link CPCs and PCWs on the same net along with a variety of other computers.

Roll Up, Roll Up, It's the Best Show Yet.

The Amstrad show is back in town. All the major suppliers of Amstrad products will be there showing their wares. It will be the launch-pad for a number of spectacular new products. This show is very much bigger than the last, the halls are wider and there will be room to queue indoors.

Graf Sales will be launching Grafpad II, an excellent digitising tablet for £59.95. It will come with a simple drawing package and is ideal for transfering pictures from paper to the computers memory.

New accounting software will be shown by both Quest and Sagesoft. Quest will be showing 'analyse', a report generating module for their Cash Trader program. They also have a surprise product which won't be announced until the day of the show. Sagesoft will have a new database program with special foreign language facilities. Connect Systems will be showing 'Money Maker', a small business accounting program for the 8256.

Blue Ribbon will be showing a range of budget software at £2.50 each or a compilation of six titles for £12.95.

KDS will be unveiling a range of hardware add-ons including an Eprom programmer and a multi-standard modem for the Joyce.

Those irrepressible NewStar people will be showing 'Delta' and 'NewWord' along with a Joyce communications package called 'Starcomm', all you need to send a telex or connect to Prestel for only £199.

Amstrad are going to be really boring and not launch any new hardware, the software division will have some excellent new titles. Amstrad User has had a sneak preview of some of this software and are pleased (and surprised -Ed) to announce that it is very good. The new titles are all Amsoft Gold Disc-only programs. The best of the bunch is 'Tank Command', a cross between 'Rescue on Fractulus' and 'Tank Busters'. Other games to look for at the show are 'Strangeloop Plus', 'Doors of Doom' and 'Golden Path'.

Arnor will be releasing two eagerly awaited support ROMs for their Protext word processor. Promerge plus is a program to generate mailing lists using Protext, Prospell is an extensive spelling checker.

Bubblebus will have an Amstrad version of the highly acclaimed Spectrum game -Starquake, with both discs and tapes available at the show.

Hi-Soft will have the program the Editor needs most, 'Catalog' keeps track of which discs contain which programs.

It promises to be a good show, come along and be sure to stop by at the Amstrad User section on the Amstrad stand.

ACU


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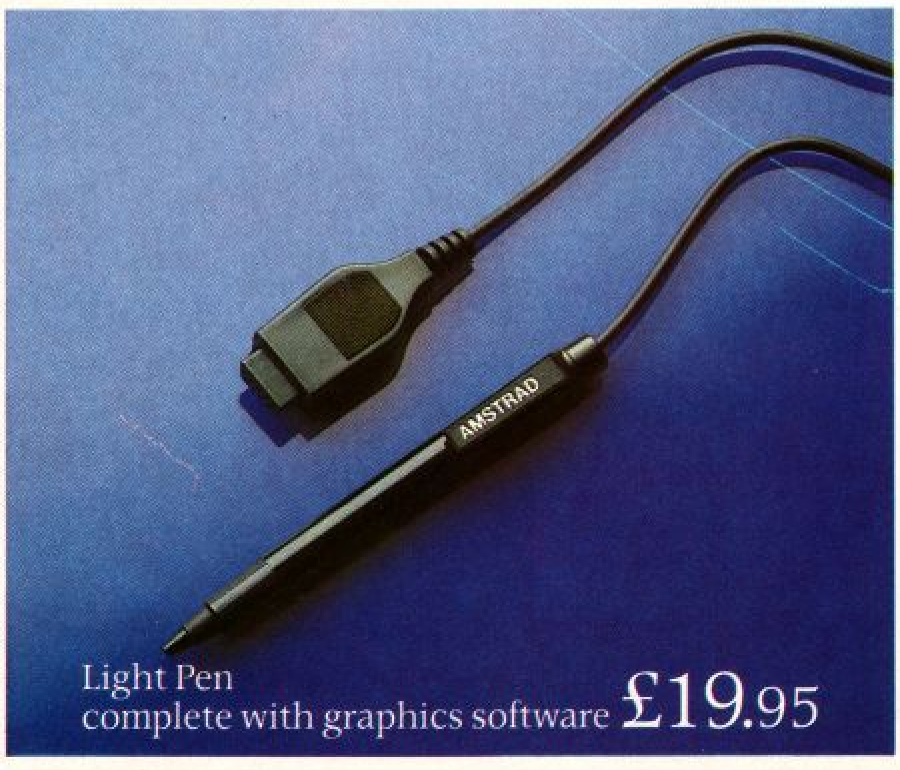
Joystick with additional joystick adaptor £14.95



Disc Drive with Interface and CPM for CPC 464 £159.95



Speech Synthesiser and stereo amplifier £29.95



Light Pen complete with graphics software £19.95



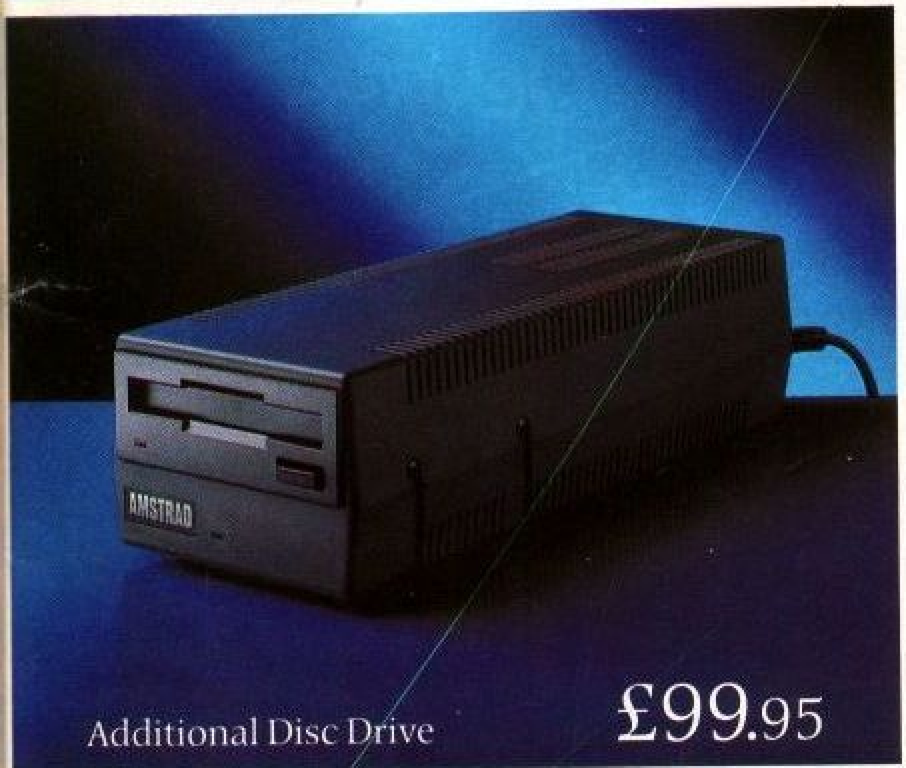
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Amstrad owners start out happy, and get even happier as time goes on.

The first delightful discovery is that both the CPC 6128 and the CPC 464 are complete and ready to use as soon as you get them home.

The CPC 464 comes with built-in datacorder, and the CPC 6128 with built-in disc drive. And both have either a full colour monitor or a green screen.

But Amstrad owners can become even more attached to their computers with the simple addition of the peripherals featured here.

They'll make your Amstrad faster, harder working and more entertaining.

And they're very easy to attach. Simply plug in, and away you go, there's no need for extra interfaces.

You may of course wish to get into some even more serious computing, for which you will need the Amstrad RS 232C specialist interface. This opens the door to modems, networks, and serial printing.

But whichever additions to your Amstrad you care to make you'll find their low prices an additional pleasure.



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NIGHTSHADE

"Very impressive ... There are no thin-line vector graphics here. Fully drawn and detailed buildings scroll smoothly across the screen without a trace of flicker ... streets ahead of most of the competition." (Home Computing Weekly) The latest development of Ultimate's 'Filmation' 3D technique looks absolutely stunning on the Amstrad. Sticks OK. (Ultimate) **464/664/6128 Twin Cassette pack with free head cleaner tape £9.95**

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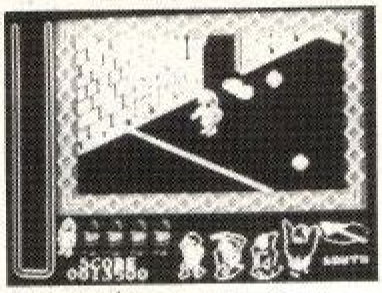
"An excellent simulation of the sport and one that hasn't been tackled before." (Computer Gamer) A 24-hour motorbike road race, for 20 bikes and riders. Success depends on making your drivers work as a team and the efforts of your pit-crew, refuelling, tyre changes and crash repairs. For 1 to 6 players. 5 skill levels. SAVE at any time. Thrilling graphic simulation. Sticks OK. (CRL) **464 Cassette £7.95"**

MATCH DAY

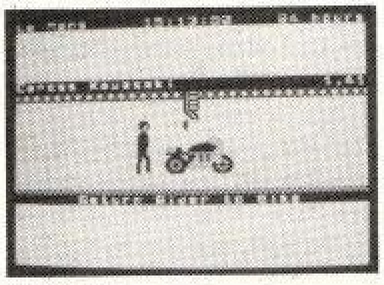
"Far superior to any other ... the reality of the whole match, with the reflection as the ball bounces, and the quality graphics make this a worthwhile buy." (ZX Computing) "Must be the definitive football game ... this one has the best graphics, playability and atmosphere ... a great sports simulation." (Crash) MATCH DAY is by Ocean. 464/664/6128 Cassette £8.95

SUPERPOWER ROMS

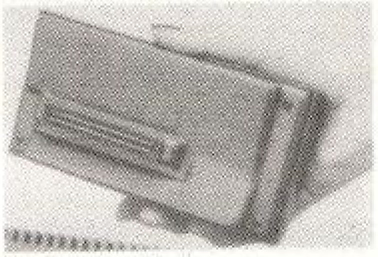
"A neat and easy way to use plug-in utilities, able to accept up to 7 ROMS. The instructions are comprehensive ... the manual is very clear and well-written and there are many help screens." (Personal Computing Today) "This could be one of the most important add-ons you could buy." (Popular Computing Weekly) Micro Power's ROM Board and ROMs have been getting rave reviews. 664 and 6128 versions should be available by now as well as 464. 1. Mailing-list/club membershiip ROM. 2. Disk User's utilities ROM. 3.BASIC Extensions and Toolbox ROM. 4. ROM Board accepts 7 ROMS. All three ROMs and the ROM board are the same price **£39.95 each.**



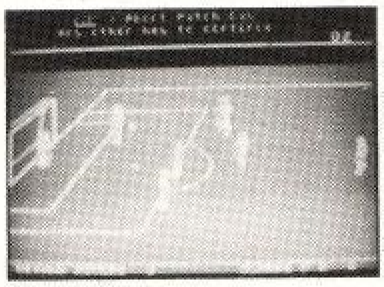
Nightshade



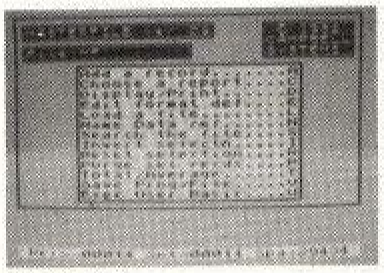
Endurance



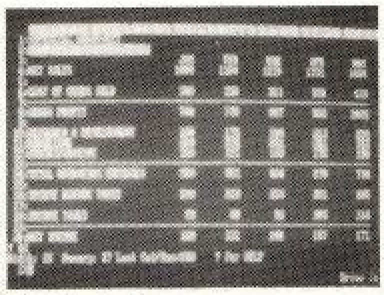
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Masterfile



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(A. Ammundsen, New Zealand)

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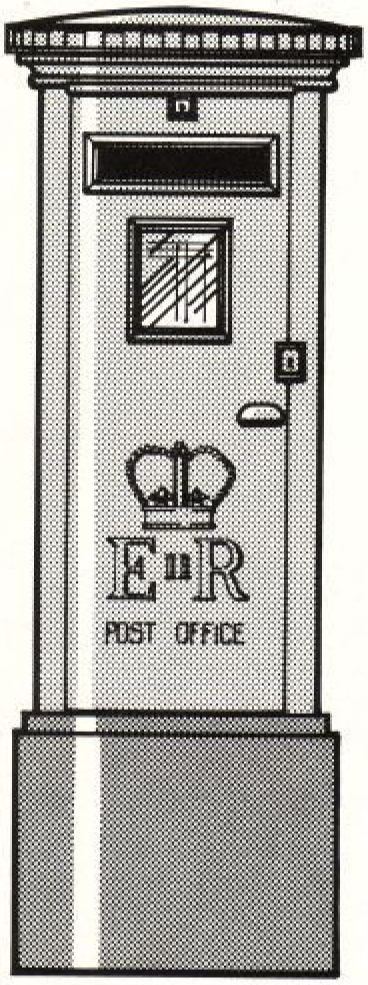
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Signature: .... Expiry Date ....
Please write clearly. If we can't read it, you won't get it.
Name: ....
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Program Name	Cass/Disk	Price
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Please bear in mind that the views expressed herein are not necessarily those of Amstrad or Amsoft. Be assured that all your views are given thorough consideration. This letters section is the Amstrad Computer User's own forum.

Write to reply



Speed Up Tools

I have had my 464 since christmas, and found it very easy to learn on. From the listing and features in your magazine I have become a fairly good programmer. Some friends and myself have formed a small software group called 'Universal Soft'. I found the programs I have written were good but slow. Although the Amstrads have a fast basic, they take a long time to print the graphic characters. What I would like to know is if it is possible to get a compiler for the 464 to convert the programs into machine code. If possible, then could you recommend one, and tell me how much it is. If not, then could you please name a good assembler.

J Maney
West Yorks

ACU: Abersoft are working on a compiler which will be available from Amsoft in the near future. However we suspect that the speed of displaying characters will not be greatly improved. Our favorite assembler is the Maxam ROM from Arnor.

A Happy Reader!

I must congratulate you on changing to the Post Office for delivering your user magazine.

For the last three months W.H.Smiths have had their issues on the stalls for five days before I eventually received mine through the post, but this month I received mine three days before W.H.Smiths had theirs.

M Toone
Derby

A Tale of Two Formats

I am fortunate to have access to both a CPC6128 and a PCW8256. I have found that disks formatted on the CPC6128 may be used quite happily on the PCW8256. However disks formatted on the PCW8256 cannot read by the CPC6128!

What is the reason for this or am I doing something incorrectly? Can you advise me of a way round this problem.

Paul Browning

ACU: The PCW8256 was designed some time after the 6128, this left room for some improvements to be made to the disc operating system (DOS) during the time interval. As a result the Joyce has a better DOS than the 6128. It is not possible to use these better discs on the older 6128 but at the same time it would have made life very difficult if the 6128 discs could not be used by the 8256. This upwards compatability means that if you frequently use both types of computer you should always format the discs on your 6128.

New User Group

I am one of the growing number of PCW8256 users and I am interested in getting in touch with other 8256 with the intention of setting up a group in which information and ideas could be circulated.

If anyone is interested in setting up a group of 8256 user please write to:

Robert Mobberley
37 Clifford Brdige Road
Binley
Coventry

Fan Mail for Joyce

I bought the PCW as soon as I could get one from Dixons. For me it was almost a dive into the unknown as I did not really know what a word processor would do having neither used one, nor seen one. i had been investigating buying a printer and a disc drive and the software to run word processing on my CPC464. However read the extremely favourable reviews of the PCW and as it was cheaper than upgrading (and offered more) I took the plunge.

Let me say quite simply it is the best buy I have made. It has literally changed my life and work. Thank-You.

Roland Humphrey

CP/M Documentation

After using my 6128 for some months now I must write to congratulate Amstrad on an excellent machine. I must however have a small moan bout the documentation, the manual is very good in it's coverage of Basic, Amsdos and general topics but information on CP/M is alsmot non-existent. I realise that the majority of 6128 buyers may not have CP/M as their main reason for buying the computer, but i think for a number of users CP/M is whay they bought the machine in the first place. The chapters on CP/M just give you enough info to get programmes running and no more, how od you expect people to rive a page relocatable assembler like RMAC with the info provided in the help file? All CP/M machines I have used in the past come with a huge Digital Research handbook, why not the Amstrad? The manual refers to Soft 971, a guide to CP/M" but this does not ssem to be available. How about coming up with the goods? Digital Research do not appear to be interested in providing manuals so please help!!

P A McArthur

ACU:Amstrad assure us that the SOFT 971 manual will be available soon. Manuals cost a lot of money to print, it is better to sell any specialist documentation to just the few people who want to know about the ins and outs of CP/M instead of having to charge everyone more for the computer. Try the Computer Bookshop for a general CP/M book. They can be contacted on 021 707 7544ge everyone more for the computer. Try the Computer Bookshop for a general CP/M book. They can be contacted on 021 707 75

Manic Poke

I am writing in sheer desperation. Can any of your brilliant readers help me before I go spare?

My problem concerns 'Manic Miner', and the Sixteenth Cavern. I can get 3 of the 4 keys, but the one to the right of the moving

platform evades me, and has done so for months. Please, does anybody know how to get it?. If so will you please let me know. Also, if you have any 'pokes' for Manic Miner which will enable to have endless lives, a huge jumping capcity, an ability to go to another cavern out of sequence etc., etc., I would love to know.

Emma Cypher
Shropshire

ACU: You can get infinite lives by typing

```
MEMORY &5000
LOAD "MANMIN15",&506E
POKE &6E25,0
CALL &506E
```

This will only work on the Amsoft version, sorry but we don't have a poke for the Software Projects game.

CROWNING GLORY

I hope you will not think me rude but re: your feature on the Devils Crown, you've made a boo boo. Fantastic though your mag is, last month you printed a competition form for this game with only six items to collect; when in fact there are seven. Also this month you say the harp is only for entertainment. Far from it; the harp collects the last sapphire.

I have completed the game with the high score of 66170 but I have not yet found the four hidden rooms.

I too made a boo boo. When I brought the game from Probe Software the first game had no candlesticks in it. So I returned the tape to Probe only to deservedly have my wrist slapped. The tape was in perfect working order. The treasure chest does not appear on the screen until you exchange a key for a padlock and only after all the other items have been collected.

I sent the competition form to Probe Software with the tape to ask why only six items were on the form when 7 were required to finish the game. To play the game.

Collect.Item to get sapphire

1 3 Gold Bells.	Ships wheel
2 3 Ships Decanters.	Empty bucket
3 3 Globes of the World.	Bottle of rum
4 3 Pair of Ivory Tusks.	Barrel of Apples
5 3 Candle sticks.	Peace flag
6 3 Piles Golden Coins.	Rusty Chain
7 3 Treasue Chest.	Harp

I have not found a use for either the Brown Jugs or the the Ships Anchors.

Mrs J Carbon,
Bestwood Park,
Nottingham.

512K

Eureka! We've done it. After years and years of research and development, millions and millions of Kronur (£1=60 Kronur) we have found the solution! It's easy and inexpensive. 512K or even more in our little Arnold. And what's even more astonishing; it is all done in Basic.

```
10 rem (c) 1985 Z laboratories Iceland
20 for n=1 to 512
30   print chr$(&4B)
40 next
50 end
```

That's all folks

Zophonias Gylfi Magnusson,
Reykjavik,
Iceland

P.S. We are working on versions in C and Pascal.

ACU

REM's

Lorry Drivers

HGV drivers may be able to read the Highway Code (Letters, January 86) but Ben Articulato obviously has not read his dictionary recently. Superseded is correct; there is no such word as superceded. (R L Brown, Retford, Notts.)

ACU Indeed, our dictionary confirms this.

Competitions

Amazing Amstrad Omnibus Competition. So many words for this (especially with spelling mistake in rules) and no rules for proper names, verbs (each verb can end in s, d, ing). Its not worth entering. (D R Cloose, Old Colwyn, Clwyd)

Regarding Book Winners in the September competition. I thought I had the right answers, and I suspect many more other 'unlucky' people thought they had too! Why did you not publish the answers as well as the winners? (Nigel R Caldwell, Kidderminster, Worcs.)

ACU The answers were;

Friends to rescue in Sorcery	8
Rooms in Knight Lore	128
Objects to collect in Jet Set Willy	175
Screens in Confuzion	64
Thermolec valves needed in Alien 8	24
Total	399

Splatch

Cheat mode: For infinite lives type: POKE &564C,0. If you would like to enter the game at any screen you want then type: POKE &5D2D,1 : POKE &5D2E,0 : POKE &5D2F,0. As with all pokes you must type them in after loading the game and before you call the start address.

Possible bug?: I can't finish screen Y. I just don't see how it can be done. It is impossible to destroy or get past the butterfly at the top and in the centre, and there is no way to 'create' carrots. Can other readers, or perhaps the writer of the game, please comment. My screen shows ten carrots required and there are ten on the screen, three of which seem inaccessible. (Steven Dunn, Cookham, Berks)

The DMP2000

Making choices of all the various computers and associated hard and software is confusing enough without reviews that say nothing.

In particular I am thinking of the DMP2000 review. What character sets can it support. How Epson compatible is compatible. Will it print out the Greek characters of the Tasword/Amsword second character set for instance. What limitations does Amstrad's 7-bit port place on the printer.

(P Norman, Dunfermline, Fife)

ACU We thought you might be more interested in whether it was tractor or friction feed etc. The Tasword second character set is produced by the graphics mode of the printer therefore if you can produce them on an Epson you can produce them on the 2000. There are no major limitations placed on the printer by the 7-bit port.

REM's

Ahoy Me Hearties

The record industry has spent years complaining that home taping is costing them millions of pounds every year. Software houses suffer in a similar fashion, but for them the problem is that a program needs to be copied to be run. When you load a program into your computer you are making a copy in the RAM. To make this illegal would plainly be stupid, no-one could run the programs they had bought. The law should limit copying on the basis of the author and software house being paid for someone owning a copy of the program. This would allow the individual to make as many back-ups as necessary, and even copy the software to disc without the software house having to worry about lost royalties. In the world of commercial software programs are protected by version numbers. When you buy a copy of Wordstar you have to register a serial number. This means that the software house, MicroPro, can check up and find out where any illegal copies came from. However WordStar was so successful that they lost track of who had bought copies and so offered a truce, you can register your illegal copy of WordStar for £40, MicroPro will then send you an official sticker and serial number. Another protection system beloved of commercial software houses is the dongle. This is a specially coded chip which plugs into the computer or is a special board which slots onto the side of an edge connector. The idea is that the dongle cannot be made by anyone other than a bona fide software house. The software checks to see if the dongle is in place, refusing to run if it is missing. This means that you buy the dongle and are free to copy the software. A similar thing is happening with games software. The first sign was the colour-coded card which came with Jet-Set-Willy, now the Lenslock system which protects programs like Digital Integrations' Tomahawk mean that you can copy software freely. Some progress is at last being made.



GENESIS V's THE GRAPHIC ADVENTURE CREATOR

Two adventure writing programs do battle on the shop shelves, Tony Kendle adjudicates

Until recently 'adventure creators' and 'The Quill' have been synonymous terms, which is really as shortsighted as calling all computer games PONG. Although Gilsoft implemented the original idea it was inevitable that improvements would appear and there have just been two new second generation adventure creators released for the CPC computers, Genesis from CRL and Incentive Software's more prosaicly named Graphic Adventure Creator.

Even a relative novice can program a simple adventure, the trick is making them fast, and squeezing the most out of the memory. Adventure creators do this for you, and let you concentrate your imagination on making the plot worth playing.

Theoretically they attract people who are talented 'script-writers' but have little programming experience. Unfortunately the Quill demonstrated that equal scope exists for abysmal storylines to be churned out at a frightful rate. However sufficient professional quality exceptions showed that as the utilities improve in power and versatility it will become masochistic not to use one, like writing your own word processor before typing a letter.

All leading adventure writers, from Level 9 to Scott Adams, already have skeleton systems of their own into which they insert the plot for each game. The ideal home utility would be no more than a friendly version of such. It should be powerful, simple and efficient in its data storage. How well do GAC and Genesis shape up?

Features

As standards advance Quilled adventures have begun to look rather tired. Certain features are becoming increasingly important in selling programs, most notably graphics and sophisticated language parsing, it is important for the adventure creators to keep up with these developments.

Graphics in particular are the mainstay of almost all hit releases. Both new programs include a graphics designer in the price, a considerable improvement on the expensive Quill and Illustrator combination. Genesis comes in three parts, one for graphics, one for text and one to join the resulting files into a finished adventure. This means you can't test both halves together. More importantly the process involves four tape changes, there is no disc option and the adventure is saved with a special loader meaning that you can't transfer it or make backups without going through the whole palaver again. GAC is nicer in that it offers a disc option, is entirely self contained and yet there does not seem to be a restriction in the room available for data since ultimately a 40K length game can be produced.

Unlike Screen Designer both store graphics as a series of routines used to redraw them at appropriate points in the game, not as binary data. Thus a simple picture can fit into a fraction of 1K as opposed to 16K. You have to wait longer for the picture to re-appear, and there is a trade off between the memory used and the detail you put into the drawing but even so Incentive say a good picture is possible in 200 bytes, and a masterpiece in 0.5K.

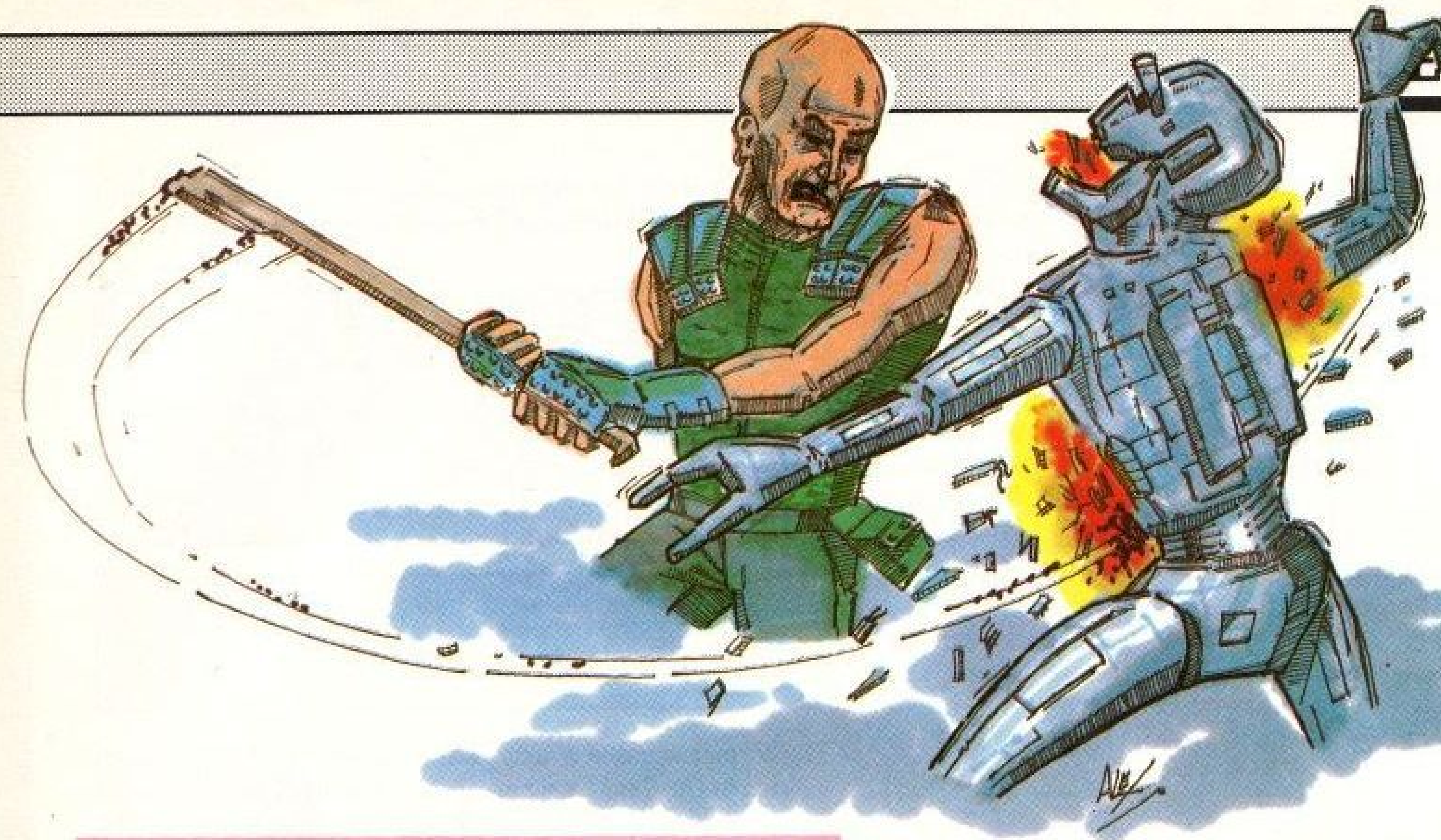
GAC uses the top half of the screen for pictures. They are constructed from a small series of options, you can draw lines, ellipses, rectangles, dots, fast fill and of course delete the last command. Once defined everything redraws quickly. You are restricted to mode 1 giving four colours but a stippling option combines these to produce ten shades.

Ellipse and Rectangle work on a rubber banding principle, they can be stretched horizontally or vertically to make a range of shapes. These options also produce either vertical or horizontal lines if they are only 1 pixel wide. More complex shapes are constructed from plotted points and lines but these use up memory at a faster rate.

As you draw something the necessary graphics commands to recreate it are stored automatically. You are given editing facilities that let you step backwards or forwards through the picture making insertions or corrections. It's easy to use but any blunders or dithering around you do on screen is recreated every time. Erasing wrong moves is therefore important to make the drawing as efficient as possible. However there can be more positive effects to the system used. Incentive suggest that a simple form of animation, such as moving shadows, can be produced by using repetetive colour fills.

Defined pictures can be merged into later ones with almost no extra cost in memory so a library of basic shapes can be designed and combined to produce each new screen, a technique used in many commercial releases. The result is a composite image showing all of the lines and some of the fills may therefore work in unexpected ways. A more powerful system would be to 'overprint' the existing picture, obscuring anything beneath, but difficult to implement.

Genesis also has rubber banding graphics routines, box, line, curve, fill etc. Editing facilities are not as good as in GAC and it is slower but there are some extra virtuoso touches. There is no stippling facility but you can include User Defined Graphic characters. Up to twenty possible graphic windows can be defined, and two possible text



windows. Again two pictures can be superimposed on screen and defined windows can overlap so that small pictures can be combined into larger ones. It also allows you to change the picture display AFTER a command has been typed so the graphics reflect the text action. Even more impressive is that screen modes can be mixed, allowing 16 colour low res graphics to be mixed with 80 column text for example but the effect tends to flicker during sound output or picture drawing.

If you still don't like the results GAC lets you toggle between text only or text and pictures during play. Genesis has a control key combination for skipping the picture being drawn.

Sound is an underexploited area of adventures and it would be no surprise if it was left out of both programs. Look for the Arnold adventure series from Nemesis to see how effective sound effects can be. Top marks therefore to CRL for including it in Genesis. Envelope shaping is provided as well as a routine that programs certain keys to produce musical notes. An entire three channel soundtrack can be created.

Language parsing, the ability of the game to understand the player's commands, is typically restricted to a primitive Verb-Noun structure in adventures e.g. "Take Sword". GAC excells here, it understands large sentences, adverbs, conjunctions and even the generic noun 'it'. An example would be "Take the sword and go north and quickly stick it in the dragon". Not bad. I hope people make proper use of this when writing and playing the games, although I find it hard to break the verb-noun habit.

Genesis is more basic in its parsing abilities but it is better than the Quill in that up to two command nouns can be handled at once. "Hit wall with head" is the colourful example they use.

Short demo adventures come with each program. 'In Like Minsk' from CRL is surprisingly poor graphically but full of inventive and funny text, whilst 'Ransom' from Incentive has no plot to speak off but excellent graphics which probably goes to prove something.

Memory

Despite all the menus and extra features that you may not want to use, a well written machine code utility may allow more room for data than a normal Basic program.

GAC gives you just over 25000 bytes to write the game but this can be divided how you want between pictures and text. Automatic text compression means that a 200 location adventure is possible. In fact Incentive are currently converting their hit Spectrum adventure 'Mountains Of Ket' using GAC and the compression has reduced the game to a fraction of its original size, leaving ample room for graphics.

When saved as a program that runs independant of the GAC itself, the data file expands to a maximum size of about 41K since some of the main program routines are saved with it.

Genesis leaves 25700 bytes free for text and the program logic and about 10000 bytes for pictures and sound. Of course the latter cannot be utilised in a text only adventure. Text compression is possible by defining 'subroutine messages' that are inserted into longer text. You are however limited to 250 messages in total which includes descriptions, clues and so on. This may prove restrictive in some game designs even without using them up on sub-messages.

Neither program uses the extra memory of the 6128 but I suppose that this does at least guarantee a wider audience for the resulting game.

Ease of use

Both utilities use a kind of programming language with specialised syntax and reserved keywords to control what happens when you type in a command. They rely on the fact that all adventures work in similar ways. At the heart are logic routines which handle the operation of the game and the data for permissable verbs, room and object descriptions. This logic runs along the lines of "if location = 1 then print room description 1, if input command is 'north' then let location = 2" and so on. The content of the message and

description text is completely irrelevent and isn't even considered by the computer, or the author sometimes.

Both utilities provide counters and status markers to control things such as the amount carriable or the length of time a lamp remains alight.

For sheer ease of use nothing to date can lay a finger to GAC. Everything is made simple by menus and prompts it is all easily editable. Once you have defined your adventure on paper all you do is enter the recognised nouns, verbs, messages, descriptions etc. and the connections between the rooms. All of these are numbered and synonyms are handled by giving them the same number.

Everything then hinges on what are called high and low priority conditions entered in a Basic-like language. The difference is that the former take effect as soon as you enter a room, the latter only after you have entered a command. An example is given later.

If GAC is like Basic then Genesis is like 'C' or one of the other less friendly languages. It looks like something a commercial programmer would have written for their own use. It can perhaps be made to hum, but for most people is simply baffling. Again you begin by entering the verbs, nouns, messages and so on and again there is a purpose built logic handling language but Genesis seems to be far less neatly conceived than GAC, albeit more flexible, and is provided with an almost deliberately obscure choice of syntax and keywords. Similarly the manual supplied with GAC is chatty and easy to follow, the Genesis prose soon has people sighing, rubbing their heads and mumbling about 'object sequences' and 'action operators'.

Consider these two examples taken from the manuals, both designed to print the description of the current location.

Genesis:-

```
MSG<6;29>:COPY<0,M(1)>:OBLOOP:
[OBLC()=PLOC0[OBST(CARRY)=0][OBST(LKAB)#0]VPRINT<(A)>:SPC:VPRINT<
OBJ>:NEWL:COPY<1;M(1)>:
ELOOP:
[M(1)=0] VPRINT<(NOTHING)>:NEWL:
FINISH:
```

GAC:-

```
IF VERB 9 LOOK WAIT END
```

The former creates a loop that tests every object in turn looking at the flags for where it can be found. The latter has a nice straightforward keyword that anticipates one of the most common actions you will want to program into your adventure.

It may be an extreme example but the essential difference holds true to a large extent, and to Genesis's great disadvantage. The point is that GAC is so easy to grasp and so fluent to use that within minutes of loading you feel the urge to sit and write something.

The choice between the two ultimately depends on what you need. Each has strengths and weaknesses and both are able to produce highly professional end results. Genesis is cheaper and provides more powerful graphics with sound, but only GAC really meets the objective of being 'a programming aid for non-programmers'. ACU

ON THE SHELF

Want to gen up on your Amstrad Computer? JEREMY VINE is our resident bookworm.

One measure of the success of a machine is the amount of books written in support of the system. If this is true, then the Amstrad series of computers (CPC464,664 and 6128) must be one of the most popular of all home micros. Certainly the number of books dropped on me by the Editor (No. Not on my head) gave me considerable eyestrain. The bookshelves may be overloaded but the books are still coming fast and furious. Here's what I thought of the latest collection.

STRUCTURED PROGRAMMING ON THE AMSTRAD COMPUTERS CPC464,664 AND 6128

STEPHEN RAVEN

Micro Press £9.95p 151p

This book really should be subtitled, 'How to write a Telephone Directory program', because that's what it's all about. The basis of the book and presumably the excuse for its existence is to teach the user the fundamentals of program writing. The intended audience would appear to be those totally naive in the writing of Basic programs. A commendable task. However this book is unlikely to be of much use to the beginner.

The first chapter suffers under the awful heading of: 'The machine: its concept and breeding'. Breeding? Well, if that doesn't put you off, the contents will. It's not till chapter five that the subject of variables is discussed, having given the user in previous chapters, amounts of code to type in, most of which is largely unexplained. A further inconsistency is seen in explanations of various Basic statements in chapter three, which assume an understanding of Basic concepts (such as 'What a variable is') yet these are not explained till later in the book.

Considering the book is teaching 'Structured Programming', it wouldn't be unreasonable to expect some structure and planning to presentation. the book concentrates almost entirely around one central program and idea. With better format this might have worked but as a book for beginners there is little to maintain interest.

Stephen Raven has written a book which is little more than an attempt at teaching a limited set of Basic commands and sadly is a failure as a teaching aid. In the words of the author, 'familiarity breeds confidence'. I have no doubt that Mr Raven can program but it is perhaps his familiarity and confidence in programming that has made him forget how difficult first steps in computing can be.



ISBN 0-7447-0034-5

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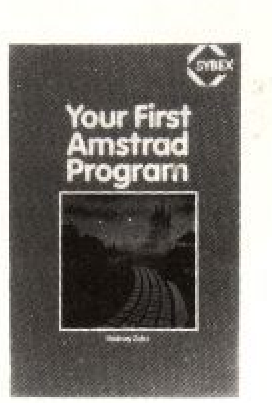
RODNAY ZAKS

Sybex £6.95

A far better introduction to the Basic language can be found in this book by Rodnay Zaks. Zaks is well known for his machine-code programming books and his works are considered as the standard reference guides for popular processors. I have never been over-fond of Mr. Zak's style of writing, though undoubtedly his books contained essential information. It therefore came as quite a surprise to receive a book which explained Basic programming at a very simple level. Furthermore I was pleased with the presentation.

As you may have guessed from comments elsewhere, I believe that books for the absolute beginner must be written in a step-by-step fashion. This book is written in such a way. Starting from a concise explanation of computers and programming languages, the author proceeds to a chapter on communicating with a micro. The keyboard and 'why you type what you type' is often a mystery to beginners and the author gently introduces the notion of programming instructions to the user.

The remainder of the book follows the logical course of calculations, variables, writing clear programs and the concept of loops (FOR-NEXT), decisions (IF-THEN) and other fundamental skills. The book is full of illustrations and is delightful to work from. My only criticism is that the book does not go far enough (no mention of arrays and data handling) but in fairness the book does say 'your first Amstrad program'. That is exactly what it teaches and a very fine job too.



ISBN 0-94788-800-4

SUBROUTINES FOR THE AMSTRAD CPC464 & 664

A.P. & D.J. STEPHENSON

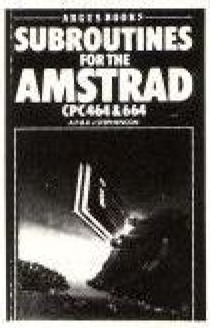
Argus Books £7.95 238p

I always think that books with titles like this mean that the author is getting rid of a few programs lying around on disc. Let me say straight away that I don't feel this is the case with the Stephenson's book. It is a welcome change from the 'Fifty Rip-Roaring Games' type of book and contains a wealth of useful programs for incorporation in users own programs.

The book begins with a general guide to using the Amstrad machine with Basic and a discussion on subroutines. The real meat of the book starts in chapter three, with a series of general purpose subroutines. These are short routines for holding screen displays, time delay loops, centering text, string responses, coding/decoding, etc. The next chapter deals with mathematical subroutines and is then followed by a section on graphics, graphs and charts including histograms, bar and pie charts, and plotting mathematical functions.

The chapter on music contains useful educational routines for choosing a given chord or arpeggio and a three channel synthesizer. Chapters seven and eight contain information on filing and sorting. This includes a RAM-based filing system and a range of sorting subroutines such as bubble, exchange, shell and quicksort.

Overall, the programs contained in this book form a very useful collection. Each routine is well documented in how it works and how to run the program, and there's likely to be something for everyone. Most likely to appeal to those past the first few stages of Basic but lacking sufficient experience in writing full-blown programs. The techniques provided are clear and concise and out of all the books mentioned in this review, was the one I liked best.



ISBN 0-85242-855-3

APPLICATIONS FOR THE AMSTRAD CPC464 & 664

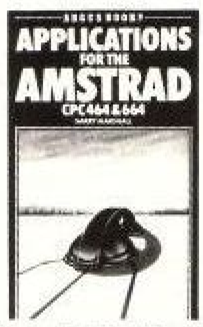
GARY MARSHALL

Argus Books £7.95 109p

Books that proclaim the word 'Amstrad' in the title are obviously trying to tell us mere mortals that the book is written specifically for Amstrad users. Here is a book that in the whole (and there's not much of it) could have been written for any micro and probably was. This book attempts to explain the range of applications the Amstrad machines are capable of running. In furtherance of this cause, Gary Marshall covers a pot-pourri of items which in total add up to very little.

The book explains what the major applications like wordprocessing, databases and spreadsheets are, and gives a guided tour in using Amsword, Database and Easi-Amscalc. Thrown into the middle of the book is a handful of programs on problem solving and then its back to talking about hardware add-ons and communications. It really is a curious little book and it contains nothing that you couldn't pick up in a good magazine (Amstrad User, of course!).

It would have been more useful if the author had come clean and just written a book about computers in general. The book suffers from a desperate attempt to write 'something' about an Amstrad machine and therefore falls between being a useful book about computers and providing genuinely useful information for Amstrad users. There may be some people who will find this book of use in explaining computer terminology but it's the kind of material that is used in padding out books. Avoid this one.



ISBN 0-85242-853-7

BASIC PROGRAMMING ON THE AMSTRAD

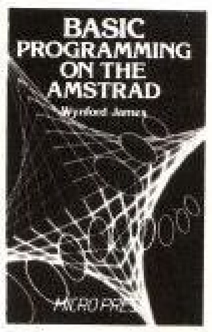
WYNFORD JAMES

Micro Press £7.95p 229p

Unlike some other books, this Basic programming guide appears to have been written with the Amstrad specifically in mind and attempts to teach both programming and an understanding of the commands in Amstrad Basic. This book was written when the 464 first appeared and therefore does not contain information on the 664 and 6128. However considering the nature of the book, it is equally usable and relevant to beginners on the other micros.

It gets you started, familiarizes the user with the concept of programming and leads the user by the hand through the jungle of commands that provide the Amstrad machine with its impressive range of sound and graphics. The chapter on sound and music is brief and looks like an added extra quickly thrown in. The remainder of the book, through covering a great deal of ground, is dull in presentation. A few more diagrams and better page layout would have done the book a world of good.

Wynford James writes in a friendly manner and obviously knows his subject. However, I was left with a feeling that given slightly more imagination, this book could have been much better that it appears. The author has attempted to write for the complete beginner and those with a working knowledge of Basic. It almost works except that the beginner may want an easier and friendlier introduction and the more competent user, less of the fundamentals. But, as an introduction to programming your CPC machine, you could do a lot worse.



ISBN 0-7447-0024-8

CONCLUSIONS

The number of books on Amstrad computers appears to be prolific and never-ending. This in itself is good for the machine and its users. But surely there is a limit to the number of 'Basic BASIC'type books that can be written. Variety may well be the spice of life but it is also a source of confusion to the computer user. The claims of book back-covers are, unfortunately, not as accurate and revealing as they should be. (often written before the book - Ed). It is not unknown for users to buy many different books and then give up in despair. Of course, reading a book is a very personal thing and such variety usually ensures there's something to everyone's tastes (mine included). Overall, the books got a thumbs-up, with a couple of notable exceptions.

SOFTWARE

GALLUP



This chart is based on the MicroScope chart as compiled by Gallup.

MicroScope GALLUP

MicroScope is the weekly trade paper of the microcomputer industry. If your computer store doesn't display the latest MicroScope chart, ask the manager to call Mark Salmon on 01-631 1433 — we'll send a copy every week.

	TITLE Publisher 4 weeks up to 7/12/1985	Last Month			Months in chart	Market Strength
1	**THEY SOLD A MILLION** *Hit Squad*	-	▲		1	100
2	**YIE AR KUNG FU** *Imagine*	-	▲		1	81
3	**3D GRAND PRIX** *Amsoft*	6	▲	A 664 D	2	71
4	**FINDERS KEEPERS** *Master Tronic*	1	▼	664	5	64
5	**FORMULA ONE SIMULATOR** *Master Tronic*	2	▼	???	2	62
6	**SOUL OF A ROBOT** *Master Tronic*	3	▼	664	2	53
7	**NON TERRAQUEOUS** *Master Tronic*	4	▼	664	5	46
8	**RAID !!** *US Gold*	10	▲	A 664 D	2	43
9	**CHILLER** *Master Tronic*	7	▼	664	5	38
10	**WAY OF THE EXPLODING FIST** *Melbourne House*	5	▼	664	5	35
11	**SPY VS SPY** *Beyond*	-	▲	???	1	31
12	**COMPUTER HITS (10)** *Beau Jolly*	-	▲	???	1	30
13	**CAVESOF DOOM** *Master Tronic*	-	▲	???	1	28
14	**SCRABBLE** *Leisure Genius*	18	▲	664	4	27
15	**FRANK BRUNO'S BOXING** *Elite*	8	▼		5	25
16	**SORCERY PLUS** *Amsoft*	14	▼	A 664 D	2	25
17	**MATCHDAY** *Ocean*	19	▲	???	2	24
18	**LORDS OF MIDNIGHT** *Amsoft*	15	▼	A 664 D	4	19
19	**BATTLE OF BRITAIN** *PSS*	-	▲	???	1	18
20	**WILLOW PATTERN** *FireBird*	-	▲	???	1	18

D — Available on Disc
664 — CPC 664/6128 Compatible
A — Available from Amsoft
??? — Untested

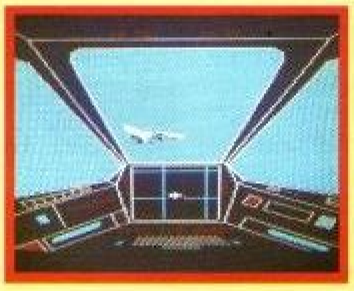
SOFTWARE CHART

THE No. 1 HIT





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HIGH PERFORMANCE PROGRAMS

SOFTWARE FOR THE AMSTRAD

ULTRABASE

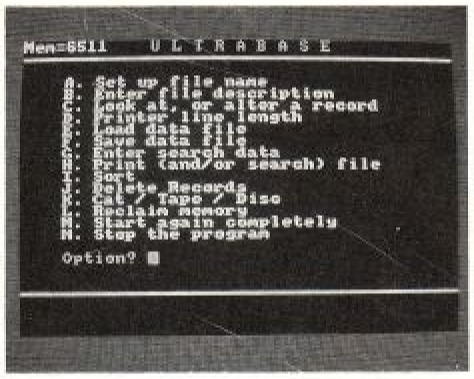
General Purpose Database

Ultrabase is a general purpose file management package allowing large amounts of information to be stored and processed. It is extremely powerful yet flexible & easy to use.

Once set up, the information may be retrieved, sorted on any field, displayed, updated, printed etc as required.

It is ideal for use in the home, school or office and is supplied with a comprehensive manual.

- Menu driven & easy to use
- Up to 15 fields per record
- Up to 25 characters per field
- Any number of files may be created
- Each file may typically hold up to 400 records (based on a 5 field record)
- More than 25K of memory for data storage
- Special label printing facility.



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DISC

£17.95 INC. VAT

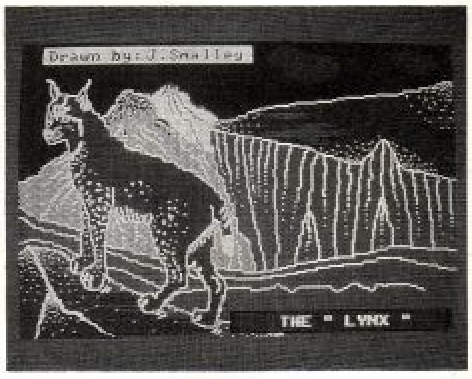
REMBRANDT

Icon Driven Drawing Package

Rembrandt is an exciting new 16 colour painting and design package. It allows you to create amazing screens on the Amstrad computer using some very advanced features.

All options are selected from an on-screen icon menu and are extremely easy to use. This must be the ultimate drawing package for the Amstrad.

- Icon controlled
- Draw in any screen mode in any colour
- Circles, squares, rectangles, polygons etc
- Preview before fixing to screen
- Very fast fill & stipple fill
- Load/save screens to tape/disc
- Text anywhere
- Special magnify facility
- Cut and paste
- Scroll screen up, down or sideways
- Keyboard or joystick controlled
- Printer dumps for DMP-1 and Epson compatibles



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DISC

£16.95 INC. VAT

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Unlock the secrets of your Tapes and Discs

Just the one program for all systems

Locksmith will make back-up copies of your favourite programs on disc or tape. It is ideal for tape users who are upgrading to a disc system and want to transfer their programs onto disc. It will give you full information about what is happening and help you to understand about protection and disc/tape headers etc.

TAPE to TAPE Handles large Basic programs, headerless files and different loading speeds

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DISC to DISC Backup of whole disc or selected files. Change program name option

DISC to TAPE Whole disc or individual files

LOAD PROTECTED BASIC PROGRAMS

ASCII TRANSFER

READ TAPE/DISC HEADERS Displays Block no, Start address, File type, Length, End address etc

RELOCATOR

ON-SCREEN HELP



TAPE

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DISC

£16.95 INC. VAT

ROM

£29.95 INC. VAT

DISC DEMON

The essential tool for Disc owners

Disc Demon provides over 25 new commands for the disc user. It will save you time, help you to understand about discs and get you out of trouble.

● Learn about how files are stored on disc ● Understand disc protection ● Recover "erased" files ● A whole host of new commands ● No more "messing around" with your CP/M disc

DISC EDITOR Full screen editor to examine or alter any part of your disc

MEMORY EDITOR Examine & alter memory in Hex or Ascii

SECTOR SEARCH Locate & edit any string on your disc

RECOVER Recover "erased" files

FORMAT/VERIFY A very speedy format & verify

BACKUP Complete disc backup

ACCESS Lock/unlock your files

WIPE Selectively delete files

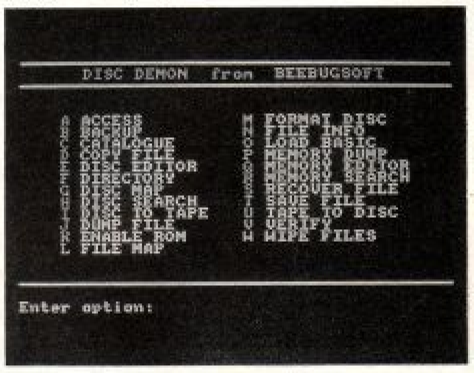
DISC MAP Display disc usage info.

TAPE to DISC TRANSFER Copy your tape programs to disc

INFO Full details of all files

COPY Copy files from disc to disc

AND MUCH MUCH MORE



DISC

£17.95 INC. VAT

ROM

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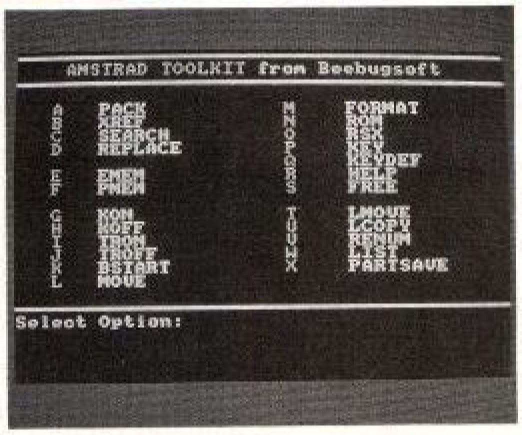
CPC464, CPC664, CPC6128.

BEEBUG SOFT

TOOLKIT

Basic Programmer's Aid

"Beebug's TOOLKIT is the standard utilities Rom for the BBC Micro and has sold thousands of copies", to quote from a competitor.



This amazing program is now available for the Amstrad. Beware of imitations.

TOOLKIT is an essential utility for all BASIC programmers. It has been written specifically for the Amstrad and cuts down time spent on program development and debugging, giving access to a set of powerful utilities written in machine code.
All commands may be called individually or from an on-screen menu. A full help screen is also provided.

- Over 30 new commands to make life easier
- Saves hours in program development and debugging
- Ideal for expert and novice alike
- Supplied with a comprehensive manual
- Suitable for the Amstrad CPC464, CPC664 and CPC6128.

Commands Include

KEYWORD Allow full abbreviations for 32 common Basic keywords. Just enter L. for LIST, N. for NEXT etc

XREF Displays values and occurrences of all Variables, Arrays, Functions, Gosubs etc

PACK Powerful program compactor. In tests it removed about 2,500 bytes from a 15,000 byte program

PRON PROFF Switch printer on & off

SEARCH REPLACE Selectively or globally locate/replace any string (inc. keywords)

DUMPA DUMPE Screen dumps in 16 tones, for Amstrad DMP1 & Epson printers

FREE Full status info

PARTSAVE Save any part of program to disc/tape

KEY Function key editor

EMEM PMEM Hex & Ascii memory editor (Or to printer)

RENUMBER Fully flexible program renumber

START Allows many programs to be used in memory at the same time (like BBC Micro)

TRACE Advanced trace facility with single stepping

LCOPY Copy and renumber program lines to elsewhere

BMOVE Move Basic program in memory

FORMAT Very quick disc formatter

LIST List program from disc/tape without corrupting the program in memory

ROM Full info. on all Roms & their commands

LMOVE Move Basic program lines

HELP Syntax of all Toolkit commands

KEYDEF Info. on all redefined keys

TOOLKIT is available on Tape, Disc or Rom and is compatible with the Amstrad CPC464, CPC664 and CPC6128

TAPE £14.95 INC. VAT DISC £17.95 INC. VAT ROM £29.95

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Plug-in Powerhouse

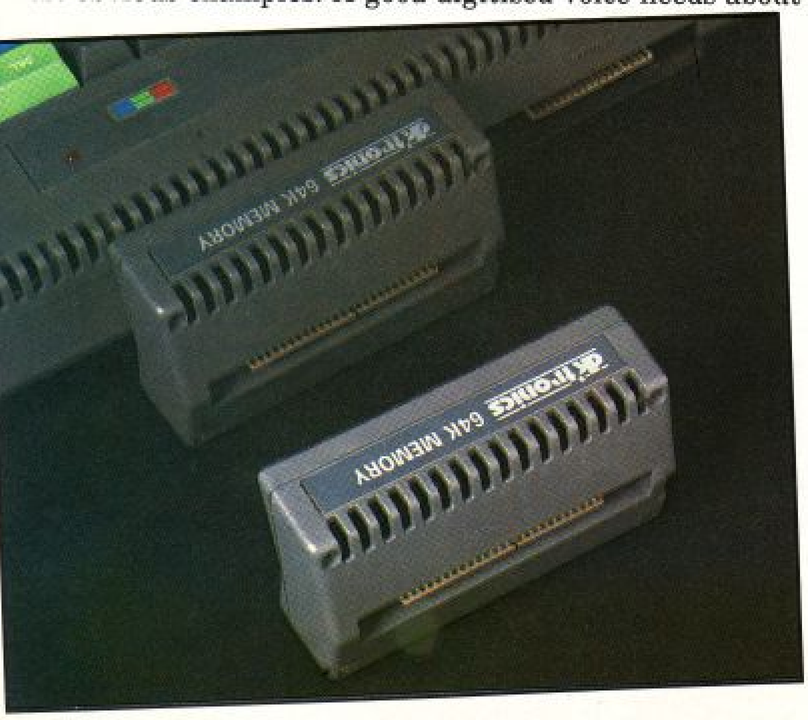
Simon Rockman finds that the memory backpack from DK'tronics really does turn the 464 into a 6128, and more.



Before it arrived Amsoft technical claimed that it was impossible, an early review model required my signature on a non-disclosure agreement. The DK'tronics RAM pack is really something special. Perhaps the excitement was heightened by the extended wait for it to arrive. However it certainly was not a case of the anticipation being better than the event. This must be the the best peripheral to have emerged for the CPC 464. The £50 64K expansion is good and useful, the £100 256K expansion is wonderful. This brilliance is less surprising when you know who designed the device for DK. It was none other than Roger Hurrey, one of the people who designed the ol' 464 hardware at MEJ Electronics.

Uses

What use is 256K? If you can get 137 rooms of Jet Set Willy into a 464 do you really want 500 rooms plus in an expanded version? Well not really, but more RAM is always useful. An adventure can have a greater vocabulary, better descriptions and graphics. High-speed games can store detailed graphics, no longer restrained by the time it takes to unpack compressed data. I look forward to the day when someone launches a game which really makes use of the extra memory. There are some techniques which will only be possible when large memories are the norm. Animation of digitised pictures (a technique to be used on the forthcoming 'Back to the Future' game) and stored voice synthesis are the most obvious examples. A good digitised voice needs about



4K per second, 5 seconds of speech is a huge overhead in a 64K machine, especially when you consider that nearly half of that is already 'spoken for' by the screen memory and the rest of the program. In a 128K or 320K machine you have got plenty of room for this kind of trimming.

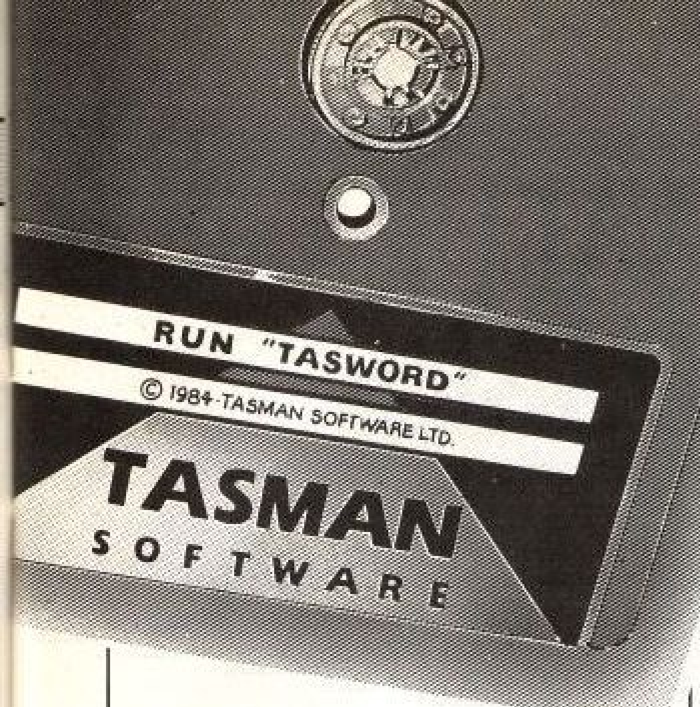
It is the non-games field which will benefit most from all this lovely RAM. The three main uses computers are put to are wordprocessing, spreadsheets, and databases. All three of these suffer when the files get too large. If they are RAM based programs they limit you and refuse to go on once full. Disc based programs suffer from the time it takes to move around a disc. Anyone who has used a database with a sort on disc option will know that even the fastest floppies can seem slow. Extra RAM does not eliminate the problem but it does delay the event, after all even a disc will fill up eventually.

Documentation and Software

It is always difficult to document hardware. Purchasers have such a myriad of uses that it would be impossible to demonstrate how the device can be adapted to all the possible applications. The problem is exacerbated by the differing abilities of the users. The DK Tronics manual conquers this by simply documenting what the device will do. This is mainly software dependant. Each command has a short example. The manual is very informative in the way in which the Amstrad works, although you need to have some understanding of how memory can be used for any purpose before you will get the most from the manual.

The software has been very well thought out. There are 14 RSX commands which allow you to access the RAM. The different commands fit in with the different uses the RAM is likely to be put to.

The simplest commands save and load the contents of the screen to and from another bank. This happens quite rapidly, but since each screen is 16K and it takes a while to move that much memory, even in efficient machine code, there are extra commands which allow you to have two screens in the main memory and flip between them (in a similar way to the Mode 3 article last month). These





TASCOPY 464
THE SCREEN COPIER

TASCOPY 464 cassette £9.90 disc £12.90

A suite of fast machine code screen copy software for the CPC 464, 664 and 6128. Print high-resolution screen copies in black and white and also large 'shaded' copies with different dot densities for the various screen colours. TASCOPY 464 also produces 'poster size' screen copies printed onto two or four sheets which can be cut and joined to make the poster.

TASPRINT 464 and TASCOPY 464 drive the following dot-matrix printers:

AMSTRAD DMP1	MANNESMANN	STAR DMP501/5/515	SHINWA CP-80
EPSON FX-80	TALLY MT-80	BROTHER HR5	COSMOS-80
EPSON RX-80	BROTHER M1009	DATAC PANTHER	AMSTRAD DMP2000
EPSON MX-80 TYPE III	NEC PC-8023B-N	DATAC PANTHER II	

THINKING SOFTWARE?... ...THINK TASMAN

TASWORD 6128
THE WORD PROCESSOR

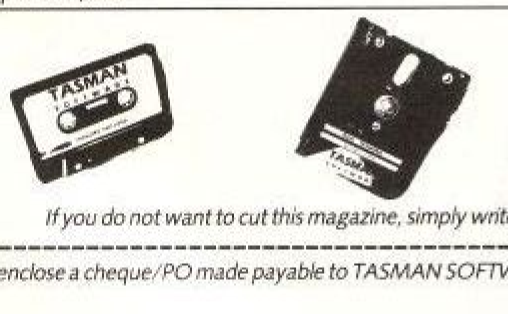
TASWORD 6128 for the Amstrad CPC 6128 disc £24.95

TASWORD 6128 utilises the additional 64K of memory in the CPC 6128. This gives text files that are over 60K long. TASWORD 6128 includes mail merge and all the other features of TASWORD 464-D. With a new notepad mode and other additional capabilities TASWORD 6128 is the most powerful of the TASWORDS.

TASWORD 464-D
THE WORD PROCESSOR – WITH MAIL MERGE!

TASWORD 464-D disc £24.95

This is the new TASWORD especially developed to utilise the capabilities of the CPC 464 and 664 disc drives. The additional facilities include a larger text file size and automation on-screen disc directories during save and load operations. A major new feature is the mail merge facility. This gives multiple prints of your standard letters, forms, etc., with each copy containing, for example, a name and address automatically taken from a disc file containing the data. This data can be entered using TASWORD 464-D, or created using the Masterfile Program Extension package. A powerful and useful conditional printing facility is included – parts of a document can be printed according to user-specified criteria. TASWORD 464-D will only run on, and is only supplied on, disc.



TASWORD 464
THE WORD PROCESSOR

TASWORD 464 cassette £19.95

"There is no better justification for buying a 464 than this program"
POPULAR COMPUTING WEEKLY, NOVEMBER 1984

Your 464 becomes a professional standard word processor with TASWORD 464. Supplied complete with a comprehensive manual and a cassette which contains both the program and TASWORD 464 TUTOR. This teaches you word processing using TASWORD 464. Whether you have serious applications or simply want to learn about word processing, TASWORD 464 and the TUTOR make it easy and enjoyable.

TASWORD UPGRADES

TASWORD 464 and Amsword owners: send your original cassette or disc (not the packaging) as proof of purchase and £13.90. Your original will be returned together with TASWORD 464-D or TASWORD 6128 on disc.

Available from good stockists and direct from:

Tasman
SOFTWARE

Springfield House, Hyde Terrace, Leeds LS2 9LN. Tel: (0532) 438301

TAS-SPELL
THE SPELLING CHECKER

TAS-SPELL disc £16.50
for the Amstrad CPC 464 and 664 running TASWORD 464-D and for the CPC 6128 running TASWORD 6128

TAS-SPELL checks the spelling of TASWORD 464-D and TASWORD 6128 text files. TAS-SPELL has a dictionary of well over twenty thousand words which are compared with the words in your text file. You can add your own specialised words to the TAS-SPELL dictionary. Please note that TAS-SPELL will only work with TASWORD 464-D and TASWORD 6128.

TASPRINT 464
THE STYLE WRITER

TASPRINT 464 cassette £9.90 disc £12.90

A must for dot-matrix print owners! Print your program output and listings in a choice of five impressive print styles. TASPRINT 464 utilises the graphics capabilities of dot-matrix printers to form, with a double pass of the printhead, output in a range of five fonts varying from the futuristic DATA-RUN to the hand-writing style of PALACE SCRIPT. TASPRINT 464 drives the dot-matrix printers listed below and can be used to print AMSWORD/TASWORD 464 text files. TASPRINT 464 gives your output originality and style. Completely compatible with the 664 and 6128.

COMPACTA - bold and heavy, good for emphasis
DATA-RUN → A FUTURISTIC SCRIPT
LECTURA LIGHT - clean and pleasing to read
MEDIAN - a serious business-like script
PALACE SCRIPT - a distinctive flowing font

Typical Tasprint output shown at approximately half size. Please note that different makes of printer produce different sized output.

If you do not want to cut this magazine, simply write out your order and post to: TASMAN SOFTWARE, DEPT AU, SPRINGFIELD HOUSE, HYDE TERRACE, LEEDS LS2 9LN

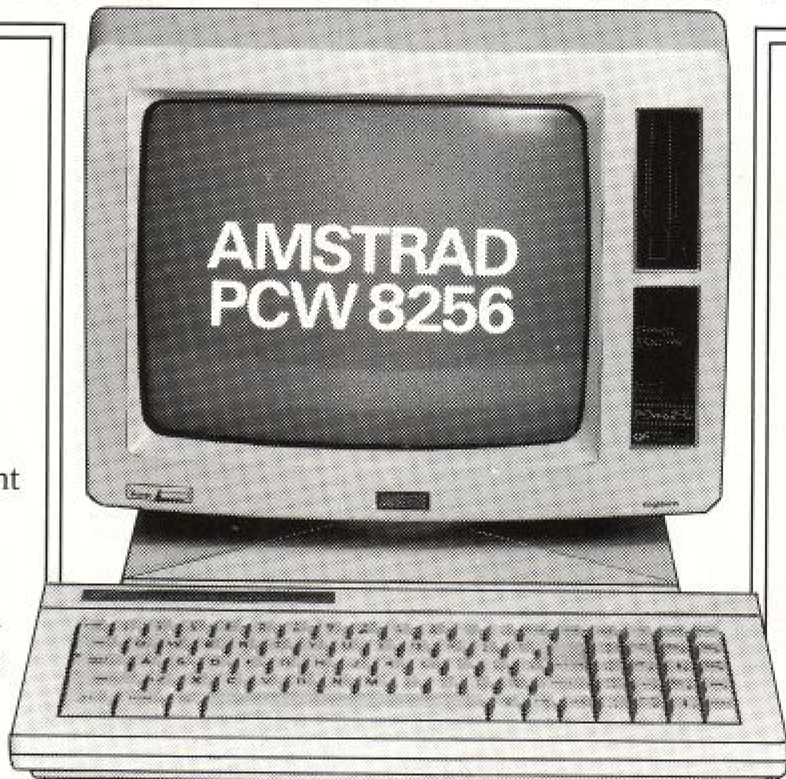
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Please send me the FREE TASMAN brochure describing your products for the Amstrad CPC 464, 664 and 6128. ☐ *tick here.*
All prices include VAT, postage and packaging AU

All TASMAN 464 software is fully compatible with the 664 and 6128.

BRITAIN'S BEST VALUE COMPUTER HARDWARE

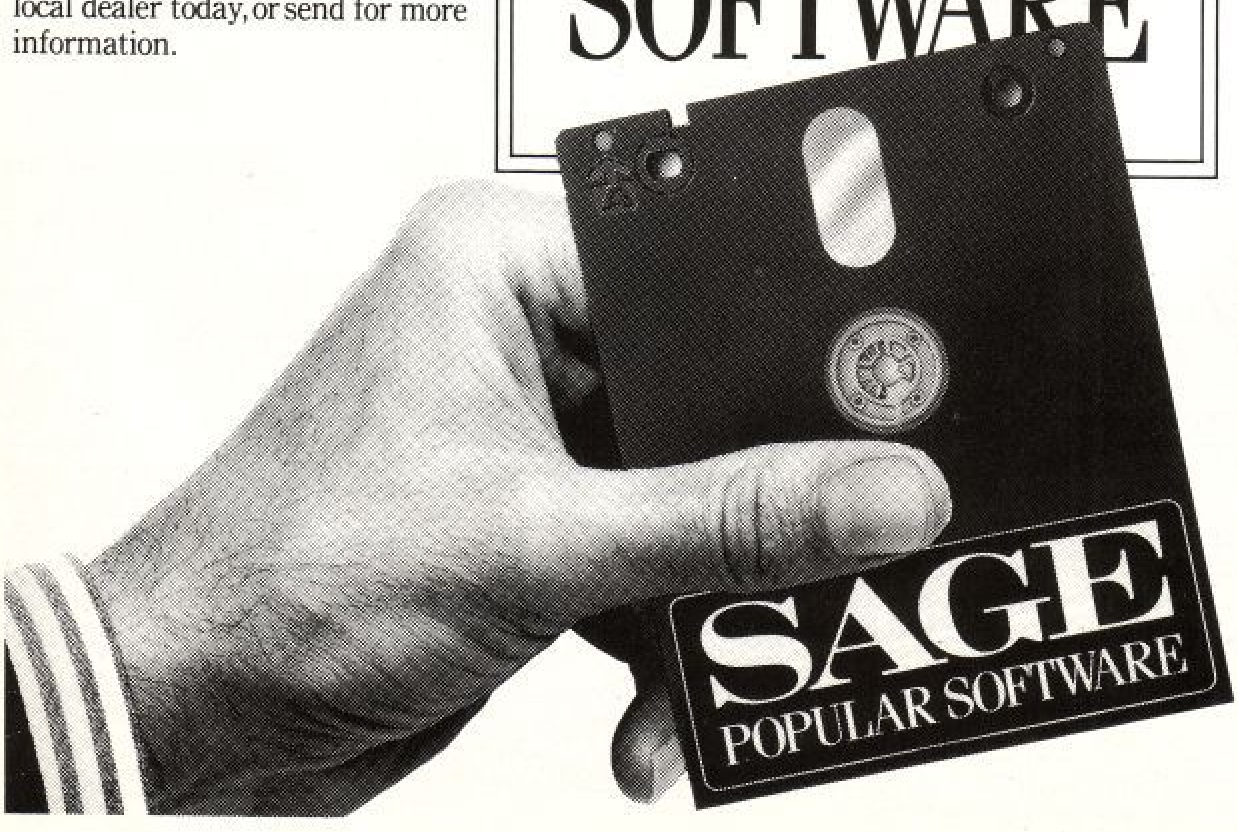


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ACU2/86

commands are |HIGH, |LOW and |SWAP. They can be used to generate a very smooth 16 frame animation. The example program in the manual shows this very effectively.

The |LOADW and |SAVEW commands extend the flexibility of the standard windows on the '464. Normally anything overwritten by a window is lost permanently. These RSXes store the information away first and make it much easier to write programs with trendy pull-down menus. A little care needs to be taken to make the best possible use of the extra memory but again the manual is pretty explicit. Combine the AMX mouse and these routines with a bit of clever software and you could write software to shame many an avant-garde business machine.

To make data handling that bit easier there are specific data handling commands. These are a bit like the RAM file handling available on the 6128 but are more flexible and more complicated. Records can be different lengths and more than one file can be held at a time. With all those banks to fill there is a load of valuable data which could be lost, disc storage is essential but with up to 256K to be squeezed onto each disc you soon find that the 180K data discs which you once thought of as huge become more than a little claustrophobic. Files will have to be split across more than one disc. This shows another advantage of the RAM pack, you can have a larger file open than is possible using a disc drive. The access to data is very much faster and makes large databases possible without having to resort to complicated keying or hash coding routines.

More advanced users may want to access the extra memory directly, without having to mess with screens, strings or windows. There are two commands to read and write to the RAM, these are |PEEK and |POKE, ideal for storing machine code programs in the sideways RAM, and since the RAM is not reset by pressing control, shift and escape you can be sure that the program will stay intact even if it crashes, providing you don't need to switch the machine off. It would be nice to have the option to add battery power to the RAM so that programs could be recovered even if you did have to switch off, unfortunately chips take a fair bit of power and low power chips are very expensive so real battery backed-up RAM would cost more than the whole computer.

The |Askram RSX lets you check the state of the ram, and see how much your expansion unit has in it. It is possible to use up to 512K at once.

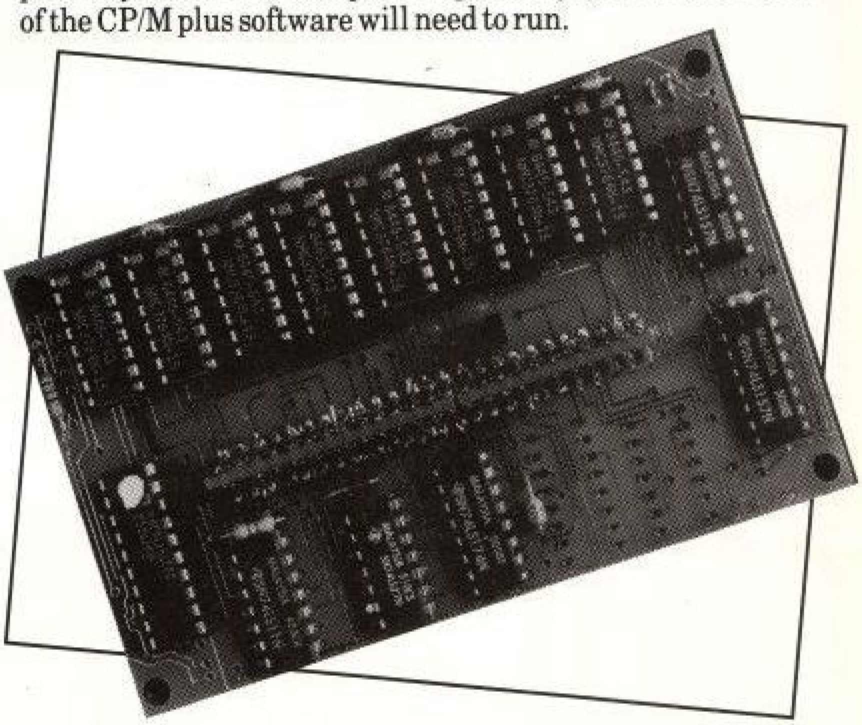
The final command is |Enable, this goes some way to pursuading the 464 that it is really a 6128, it does not add any of the nifty new Basic commands like Fill or Frame, nor does it move the keyboard addresses in memory, although this problem can be minimised.

Software Compatibility

The RAM pack really does turn a 464 into a 6128, all you need is to add discs and change the ROM. Unfortunately the new 1.1 ROM is not available as a spare part. This is for good, sound customer service reasons. The strict compatibility path that Amsoft have always offered means that the majority of users would not be aware of the difference. Providing that none of the new Basic commands are used any 6128 program should run on an expanded 464. The extent of the hardware compatibility is shown by running the DK software on a bona fide 6128. All the programs and demos work. The RSXes mentioned above are of use to anyone who programs in Basic on the 6128, perhaps DK will sell the software separately.

Both Tasword 6128 and Masterfile 128 are oblivious to the unorthodox origin of the surrogate RAM, they work perfectly but do not use more than 64K of extra RAM.

The most contentious issue of software compatibility is CP/M plus, one of the great advantages of the expanded memory is that CP/M programs have more room to run in. The RAM pack does not affect CP/M 2.2, you still only get the regular 39.5K to run your programs in. CP/M plus gives you a whopping great 61K TPA (Transient Program Area - the space allocated for your program). You can't have this though, even with the total hardware compatibility, and it is those nasty people at Digital Research who won't sell it to you. NewStar have a thing called DPL DOS. For around £30 a copy this will do lots of nice bank switched things in a CP/M plus way but it is not the pukka operating system that much of the CP/M plus software will need to run.



If you have a friend with a 6128 you could take a back-up of his disk but that is strictly illegal. CP/M plus won't work straight off, this is part of the rationale behind the |Enable command, although DK'tronics are not too keen to promote the piracy of CP/M plus and don't explain things fully, they also tuck the |Enable command away in the back of the manual.

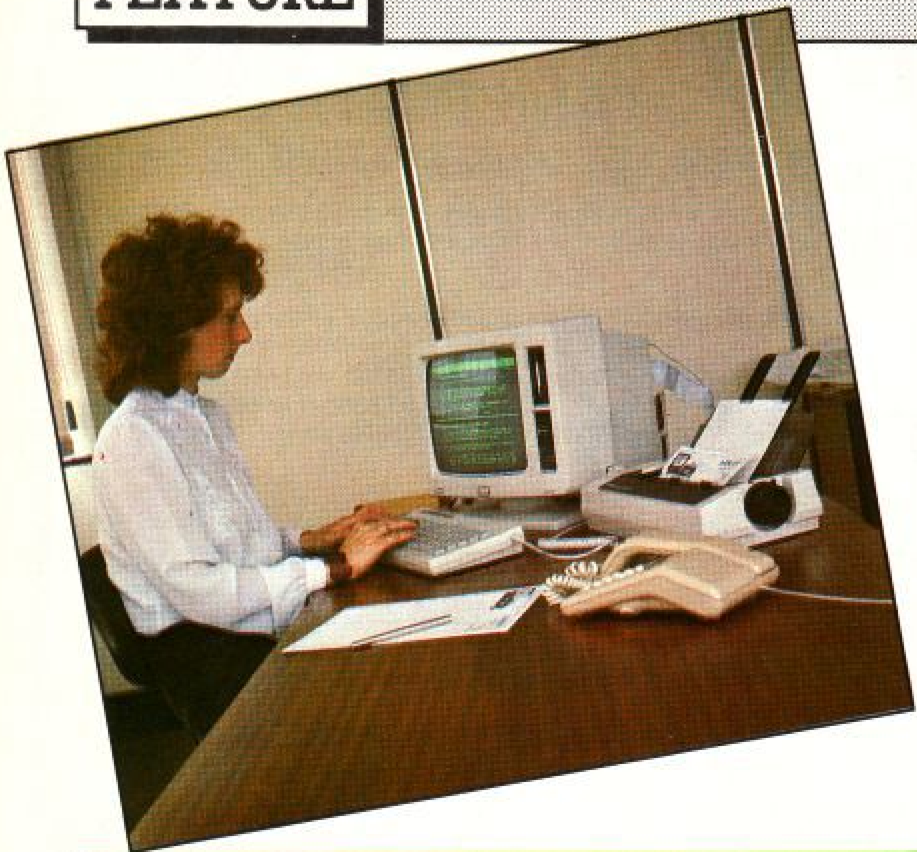
Even if you use |Enable not all CP/M plus software will run, this is due to the changes in the keyboard scan. The clever engineers at DK have a small software patch which fixes these problems from CP/M.

Conclusion

I have been converted from a total sceptic into a fan of the DK'tronics RAM. The device now has a permanent home on the back of my 464, along with the Maxam ROM board and Honeysoft serial interface.

There is one, very slight difference between the expansion and a 6128. If you press control, shift and escape on a 6128 you reset the computer totally. If you do this on an expanded '464 you end up with a corrupt bank of RAM on the screen. This can be fixed by powering down and on again, but what is more worrying is that there is a difference.

All told the DK device is excellent, it is pretty cheap, performs well and comes with software which would make the average 6128 owner go green. I just hope that DK don't want the review model back in a hurry. ACU



looming I shall call the machine the PCW, as I don't wish to distract your attention by continually using cheap double entendre.

When you first lay your hands on Joyce, then, you will see that Amstrad has continued its policy of simplicity by running everything from a single plug. A minor point with which to begin, but one that proves continually useful in my own work where I review software on other computers such as the Commodore 64, Dragon and MSX. With seperate plugs required on those for computer, monitor and disc drive or tape recorder, that still leaves me a single socket on my four-socket extension cable with which to connect up the PCW and write the review leaving the software up and running. Admittedly I could still do this while I was using the old-fashioned manual typewriter, but any other word processing system would have meant having to have yet more cables running behind my desk, which already looks like an explosion in a spaghetti factory.

Another feature which distinguishes Joyce from other machines in this price range is that when switched on it is in effect a 'dead' micro. All you see is a blank green screen

A HANDS-ON EXPERIENCE WITH JOYCE

By Mike Gerrard

This series of articles on the Amstrad PCW8256 will be written not from the point of view of a journalist having a few hours' bash with the machine and needing to produce a review for an impatient editor, but on the basis of my having bought one of the first batch of Joyces to reach Dixons back on September 26th, and having used it exclusively ever since on a daily basis to earn my bread and butter as a freelance writer. Note the 'bought', incidentally, which means that having parted with five hundred hard-earned pounds for the micro, VAT and a box of discs, I shall feel entitled to knock the machine if necessary.

Inevitably my own demands on the PCW will be different from those of other people, but there should still be a great deal of common ground - I've used it so far for letters long and short, articles of several pages, three chapters of an almost-finished book, and even a TV comedy script. What is common ground to everyone is what you get when you unpack the box, so we'll start with a look at the hardware and non-LocoScript software. I shall also apologise in advance for any untoward puns that slip into the piece because of Amstrad's own predeliction for referring to the computer as Joyce. If I see any unfortunate terminology staring at you, the only facility it has at this point being to read and load whichever disc you put in the drive. As well as not clogging up the available memory with a perhaps unwanted Basic, this also serves, if you like, as a security device against unwanted little fingers playing with the machine in your absence. You could always stick the detachable keyboard in your pocket to achieve the same effect, I suppose, but locking away the systems discs is much easier. The main virtue of this 'dead' effect, though, is that you choose how you wish to use the micro, loading up LocoScript, Logo, Mallard Basic or CP/M according to your needs. I think the versatility of the PCW is something that people, including the cynics, are only going to appreciate once the machine has been generally available for some time. Although a wide range of CP/M software is quickly being converted for the 3" disc format, including financial packages and Infocom adventures, a machine generally has to be on the market for at least 12 months before the "I wouldn't have thought it possible" software starts to appear.

On the subject of those 3" discs, I've already had people asking me if it's wise to buy a computer which uses this allegedly non-standard size of disc. Well, apart from the fact

that there is no single accepted standard disc size, there being several available, I think the rate at which the various Amstrad micros are selling will quickly ensure that the 3" discs become widely acceptable. Don't forget that it's not just the PCW which uses this type of disc, but also the other Amstrad machines, and as these are selling in their hundreds of thousands it would be a foolish software house that ignored this disc format.

The other point about the discs is their unusual nature when you've been used to dealing with 5 1/4" floppy discs. Initially they certainly seemed strange to me, their small size making them seem almost like toys, but after a week or so of using these 3" disks and then having to use a floppy disc for something else, it was the 5 1/4" disc that seemed like the toy. If you've ever had to post one or transport one in your briefcase then you'll know how much care you have to take to prevent them from bending and destroying precious data, whereas the solid 3" discs in their plastic cases could be carried around in a pocket full of sticky sweets without risk. Sending them through the post is like sending cassette tapes - a jiffy bag should prevent the plastic case from breaking, though you should in any event wrap them in silver foil to try to prevent any inadvertent electronic damage to the data. Preparing back-up discs is simplicity itself, though, a one-minute task at the end of the day using the CP/M Disckit program that's provided. As for the disc drive itself, it is fast and reliable. In two months of use I've experienced only one occasion when it wouldn't read the information on a disc, even when the disc was removed and reinserted, but on trying again a few minutes later the disc was accurately read.

The memory available on a blank disc is just under 180k per side (unlike some, you can turn these discs over to access both sides), so once you've loaded LocoScript into the PCW you can put a blank disc in the drive and on each side of this fit something like 120-180 pages of text, depending obviously on how the text is spaced and laid out. This should cope with the majority of lengthy documents, even books, with two disks required at most.

PRINTER POWER

One of the factors that influenced me in choosing Joyce, apart from it being several hundred pounds cheaper than any comparable system, was the way in which commands to the printer are all issued from within the LocoScript program and by using the keyboard. Learning to use a word processor in place of a typewriter is traumatic enough, especially as a freelance when every day you spend getting used to your new toy rather than writing is a day for which you have no earnings. Learning to use a printer as well was something that worried me, having heard friends talk about dip-switches, interfaces and problems of incompatibility, with some printers giving you a '#' symbol every time you want a '£' sign, and so on. In this respect, though, Joyce is very user-friendly, and what you see on the screen is what you get on the page, instructions to the printer for high-quality or draft mode, double-space etc all coming from menus or direct commands. There is also a Direct Printing command, which allows you to type one line at a time, this then being printed out when you press the RETURN key, useful for adding those odd lines you occasionally forget at the start or end of a document.

If you're not satisfied with the quality of print provided by the Amstrad printer there will be interfaces available to allow you to connect up to other machines, though as someone who's always been extremely fussy about presentation and would even retype an entire page of an important letter or document rather than resort to Tippex, I must say that I've been more than satisfied with the results from the printer. With the draft option you can see the typeface is obviously dot-matrix produced, but in high-quality mode it's a discerning eye that would manage to spot the dots. People who I've sent material to have asked me more than once: "Is it a dot-matrix printer?"

The problem I've found with the printer is simply a practical one, which is that the cable and wire which connect monitor to printer both come out of the monitor high up on the back from the right-hand side (as you look at the screen) and then go into the printer in the centre at the back, just below where the continuous stationery feeds in (though you can also use single sheets, if you wish.) This very much restricts how you can arrange the PCW on your desk. The



Joyce Caley and her namesake the PCW8256

printer must be on the right-hand side of the monitor, and no more than about nine inches away if you intend to use continuous stationery. With the monitor at desk level, the printer has to be raised up slightly to prevent the leads interfering with the continuous stationery on its way in. A little juggling around should produce a practical solution, but you might have to wait a while till helpful add-ons start to appear to alleviate these slight niggles.

While on the subject of printing, I've found that when using continuous stationery the plastic Paper Tray is better employed if you lift it off and reverse it, which allows it to lie almost flat and guides the paper out much more easily than when the tray is upright or removed completely. Most people will have realised that there is also a hiccup in the manual which instructs you in how you print out a sample letter before it tells you how to put the ribbon in the printer. This tip is obviously a terrific saving on the cost of ribbons, but could be a strain on the eyes of recipients.

COMPACT KEYBOARD

Joyce's keyboard is detachable, connecting to the monitor with an extremely long cable - you could, if you wish, sit so far away from the monitor that you couldn't actually read what's on the screen, though if you're going to be printing out letters without using ribbons this doesn't really matter, I

suppose. I prefer the keyboard raised at a slightly steeper angle than the very slight slope that it has, and a paperback book stuffed under the back of it works just as effectively as the sets of legs which will no doubt appear at great expense in due course. The keys are clustered slightly too closely together, with the occasional incorrect keystroke inevitable, but I haven't yet experienced any irretrievable disasters because of it. All unusable keys are automatically disabled, Joyce giving out an irritated 'beep' should you touch her in the wrong place, but till someone can also manage to produce a program which disables all keys except the one you intended to hit then I suppose the PCW's keyboard is livable with.

It is quite a sizeable keyboard in another respect, however, as it has the equivalent of not one but three shift keys, the keys marked ALT and EXTRA giving you access to characters not on the conventional keyboard. For instance if I hit the 'd' key then shifted it becomes 'D', of course, but with ALT it becomes "δ" and with EXTRA it becomes '†'. The ALT keyboard offers you a number of Greek characters along with fractions, arrows and mathematical symbols, while EXTRA gives you a few more foreign characters such as ¿ and ¢ as well as the numeric keypad on the extreme right of the keyboard.

Also in your PCW package you will find two discs, the first of these containing the word processor LocoScript on one side, with CP/M Plus on side two. I'll be looking at LocoScript in more detail in the next of these articles, and CP/M is also being dealt with in another series of articles by Simon Craven, but it's worth emphasising here that your Joyce is not just a dedicated word processor. You can also load up its Mallard Basic file if you have an interest in Basic programming which you want to make use of, and a review of this Basic appeared in the December issue of Amstrad User. Yet another file allows you to use any one of eight different character sets, on top of the UK set provided, these being US, Japanese and six European languages.

TURNING TURTLE

One of the more immediately accessible files is the one for DR Logo, that not being a quaintly named gentleman from the medical profession but an abbreviation for Digital Research's implementation of the Logo language used widely in schools and also commonly referred to as Turtle Graphics. Well, this should be one of the more accessible files but because the manual is very skimpy in its coverage of Logo, giving it no more than a few pages, you'll have to do a bit of work yourself and perhaps also buy one of the many books on Logo around. Make sure, though, that you get one dealing with DR Logo, such as Boris Allen's Guide to Logo available from Amsoft, as there are other implementations of this language which differ slightly in their commands and capabilities. Joyce's manual only shows you how to make use of a few commands, and then gives a full list of all commands available, the equivalent of being taught Basic by being given a list of the Basic commands without explanation as to what they do and how they work in combination.

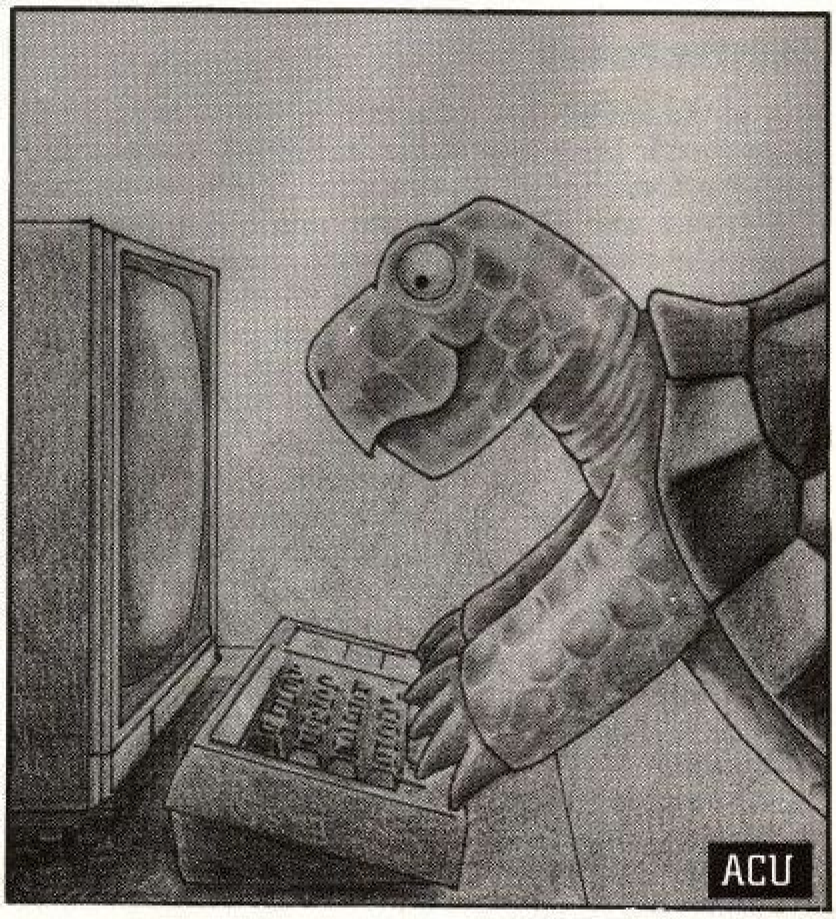
DR Logo should be regarded as a feature of the PCW, and an additional reason for considering buying the machine whether you have children or not, rather than an almost ignored added extra. The manual only shows you how to draw a few squares and straight lines, and you would be forgiven for thinking that it wasn't possible to do circles and curves, which in fact is very straightforward. Try the following:

```
tocircle
repeat45[fd5rt8]
end
```

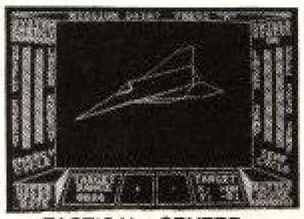
The size of the circle is dependent on how many units you move the cursor forward, and you should be able to adapt this yourself so that this number can be entered as a variable each time (even the manual explains that much!), while if the repeat command is changed to 22 then the result will be a semi-circle (well, as close as you'll get it), or repeat 11 will produce a quarter circle. Experiment by altering the figures for 'repeat' and 'fd' to see a range of sizes and shapes for curves.

Nor is the manual very good on explaining how drawings can be built up from their component parts of squares, rectangles, triangles, circles, ellipses and so on, which is one of the main purposes behind the idea of Logo, leading on to an understanding of how programs in Basic or other languages are built up from sub-routines that perform their different tasks. Logo is great fun, and it's worth mentioning here how easy it is to produce a print-out of any artistic masterpieces you wish to preserve. This is important if you have children who will almost certainly want copies of the drawings they've produced, masterpieces or otherwise. By pressing the EXTRA and PTR keys together, the PCW will do what's called a screen-dump, which means an exact print-out of the contents of the screen - cursor, text, drawings, warts and all. You can, incidentally, do a screen-dump from anywhere with those two keys, whether using LocoScript, CP/M or whatever.

That's a feature which might have been saved for a later article, but we'll throw it in with this month's free of charge and courtesy of Amstrad. Next month will see a more detailed look at LocoScript, including what it can't do as well as what it can.

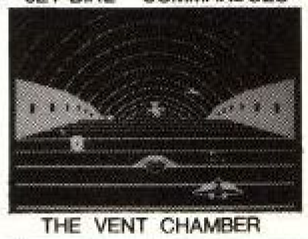
















Roland Takes a Running Jump

PART 3

This month it's one small leap for Roland, one giant program for mankind, as we hit you with all the remaining machine code in one go. Bytes by Keith Wilson and Marcus Sharp. Words by Peter Green.

The editor (all fall on bended knee) was on the phone. "This Roland series, can I have a program in the next part that actually does something?" The only permissible answer to questions like that is "Yes, sir," so we're abandoning the piecemeal, one-routine-at-a-time approach and presenting all of the remaining machine code in one go. The advantage of this is that people who prefer fun to information can just type in the rest of the listing and start leaping. The rest of you will have rather a lot to plough through, but "Running Jump" is neatly written in well-defined blocks, like all good machine code programs, so it should be easy to follow what's happening. Everyone involved in the game is very pleased

with the final result, and we're sure you will be too. Why, even the editor is happy!

The Listings List

We have several chunks of program to consider this month. If you want to type-it-in-and-go, you will be interested in Listings 1,2 and 3. Listing 1 is the short BASIC program to load and run the machine code routines. Listing 2 is the BASIC hex loader for the machine code program, while Listing 3 is a room designer, for those among you who feel creative and want to produce your own customised version. It uses some of the routines from the main game (so that has to be loaded into the computer for the program to work), and allows you to paint in floors and walls of the various types wherever you wish, define the starting points for Roland and the two monsters, the monsters' paths, a title and the ink colours for the screen, and the level number. The resulting data file is called SCREENS.BIN and is used by the ROLAND program. The designer program is very easy to use, but actually producing a screen which is challenging, but not impossible, is something that will require a lot of practice. The nine screens provided here should give you some ideas.

Next month we will print Listings 4 and 5. Listing 4 is a set of nine feindishly difficult screens which show what can be done with the designer. Listing 5 is the source code for the machine code program, for those readers who are interested in how it all works.

The Running, Jumping, Standing Still Show

To produce a working version of the game, first type in Listing 1 and save it to tape or disc under the filename "ROLAND". Then type in Listing 2 and run it: this generates the machine code program and saves it under the filename "GAME.BIN". For this month you will need to work with screens you have designed yourself. Type in listing 3. Save it on a seperate tape then use it to create a file called "SCREENS.BIN". This must go on the tape after "ROLAND" and "GAME.BIN". Tape users must have the files on cassette in that order, but obviously this is irrevelant for disc users.If you now load and run "ROLAND", it will set HIMEM to reserve sufficient space for the machine code, and load the two binary files. Then you're asked which level you wish to start at: type in a number from 1 to 9. After setting up the required tone and volume envelopes for the sound effects and setting a rapid ink flash speed for the death routine, the main machine code program is called.The game itself then follows the classic pattern. On each level you must collect five treasures (3" floppy discs) and then make your way to the exit to the next level (the blocks with crosses). To make (programming) life simple the conveyor belts are not animated, but they do have arrows on them to indicate the direction of travel. Melting floors . . . well, they melt . . . and don't touch the deadly plants! Finally, the large animated monsters represent the twin banes of an editor's life: the telephone, and the man in the MD's chair. You've heard of the Stay-Puft Marshmallow Man from Ghostbusters? Here's the Sugar Monster . . .

Once you've died five times (and believe me you will), control returns to the BASIC program so you can play again. Pressing the small ENTER key will perform GOTO 30, running the program again from the same level. To start from another level, type GOTO 20 and press the large ENTER key. To stop during the game, press ESC and you'll drop back into BASIC: but there's no pause facility (evil, aren't we!).

Designs On You

The screen designer can be used to make small changes to the existing screens, or start from scratch with your own ideas. Note that it also requires two of the routines from the main game, which it loads in line 30. Your various options are selected by single letter keypresses as shown in Table 1.

LOAD loads in an old set of screens that you want to edit. When you're happy with the screen data, SAVE saves it under the filename SCREENS.BIN ready to use with the main game. You could keep a whole set of different screen



files on tape, changing to the required cassette after the main game has loaded.Both the current graphic to plot (see Table 2) and the current level to edit, are selected by pressing keys 0 to 8 (the program adds one to the current number to set the level range from 1 to 9 as required), First select and display the level you want to edit by pressing its number (minus 1), then P. This displays the current design of that level.The cursor keys move the cursor around the playing area: pressing the COPY key places the currently-selected graphic at the cursor position. Alter the current graphic as required by pressing keys 0 to 8. To save time, it's possible to leave a TRAIL of the current graphic behind the cursor as you move it: this feature is toggled on and off by pressing T.

Each level can be displayed in its own set of colours, which are chosen by selecting the INKS option and then entering your chosen colours in response to the prompts. You have to enter two numbers, (separated by a comma) for each prompt, and you are strongly recommended to have both numbers the same (eg 16,16), which gives a non-flashing colour. Putting in two different numbers gives a flashing ink, and



bearing in mind that the initial BASIC control program makes the flash speed extremely fast, this is only recommended to fans of eyestrain. Nevertheless the option is provided in case someone can come up with a good use for it. Also, INK 1, which makes up most of the Roland character, is always white, so you should choose a darkish colour for the backgound, INK 0, otherwise you won't be able to see him!If you get in a complete mess and want to start again, the currently displayed screen can be wiped clear by pressing *.

Once the background is to your liking, you need to place the moving characters on it. Roland is simple enough: you simply move the cursor to the place where you want his head to be at the start of the level (remember that Roland is TWO characters high), then press @. The monsters are slightly more tricky. You are allowed per level, and the following procedure is done for each. Move the cursor to the position where you want the TOP LEFT corner of the monster graphic to start (remember that each monster is two characters high and two characters wide). Now press M.

Following the prompts, enter the monster number (1 or 2), the monster graphic number (1 for the Sugar Monster, 2 for the telephone), the amount of movement (ie the initial velocity) in the X and Y directions (this is -1 for left or up, +1 for right or down, 0 for no movement in that plane) and the distance in characters that the monster travels before reversing direction. You will need to be careful here to make sure you don't try and move the monster off the screen. In the game proper, setting the X velocity zero will make the monster move up and down only, setting Y zero will make it move left and right only, while if both velocities are non-zero the monster will move diagonally. Of course if both velocities are zero the monster will stay still, but that's not much fun, is it?Finally, choosing the NAME option lets you assign a silly name for the current level, up to 40 characters long.

TABLE 1

0-8	Select current number (for level to edit or block to display).
Cursor keys	Move cursor.
P	PRINT; displays the level corresponding to the current number and allows it to be edited.
COPY	Place current number graphic at cursor position.
T	TRAIL; leave a trail of the current number graphic behind cursor (toggles on/off).
I	INKS; allows selection of colours for INKs 0, 2 and 3.
*	CLEAR; wipes currently displayed screen clear.
N	NAME; allows entry of the title string for current level.
@	Sets start position of Roland's head at cursor for current level.
M	MONSTER; allows monster data to be entered for current level.
L	LOAD; load a SCREENS.BIN file into screen editor.
S	SAVE; saves current screens as file SCREENS.BIN.

TABLE 2

Current Number	Graphic
0	Exit
1	Treasure (disc)
2	Conveyor left
3	Conveyor right
4	Deadly plant
5	Thin floor
6	Thick floor
7	Melting floor
8	Empty space

DRA = CP/M

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Listing 1

```
10 MEMORY &3FFF:LOAD "game",&8000:LOAD "screens",&4000
20 MODE 1:INPUT "Which start screen";level
30 POKE &8392,level
40 ENT -1,1,-2,1:ENV 1,15,-1,4:SPEED INK 2,2
50 CALL &8354:MODE 1:KEY 11,"GOTO 30"+CHR$(13):PRINT "PRESS THE SMALL ENTER KEY TO PLAY AGAIN...":PRINT
```



Listing 2

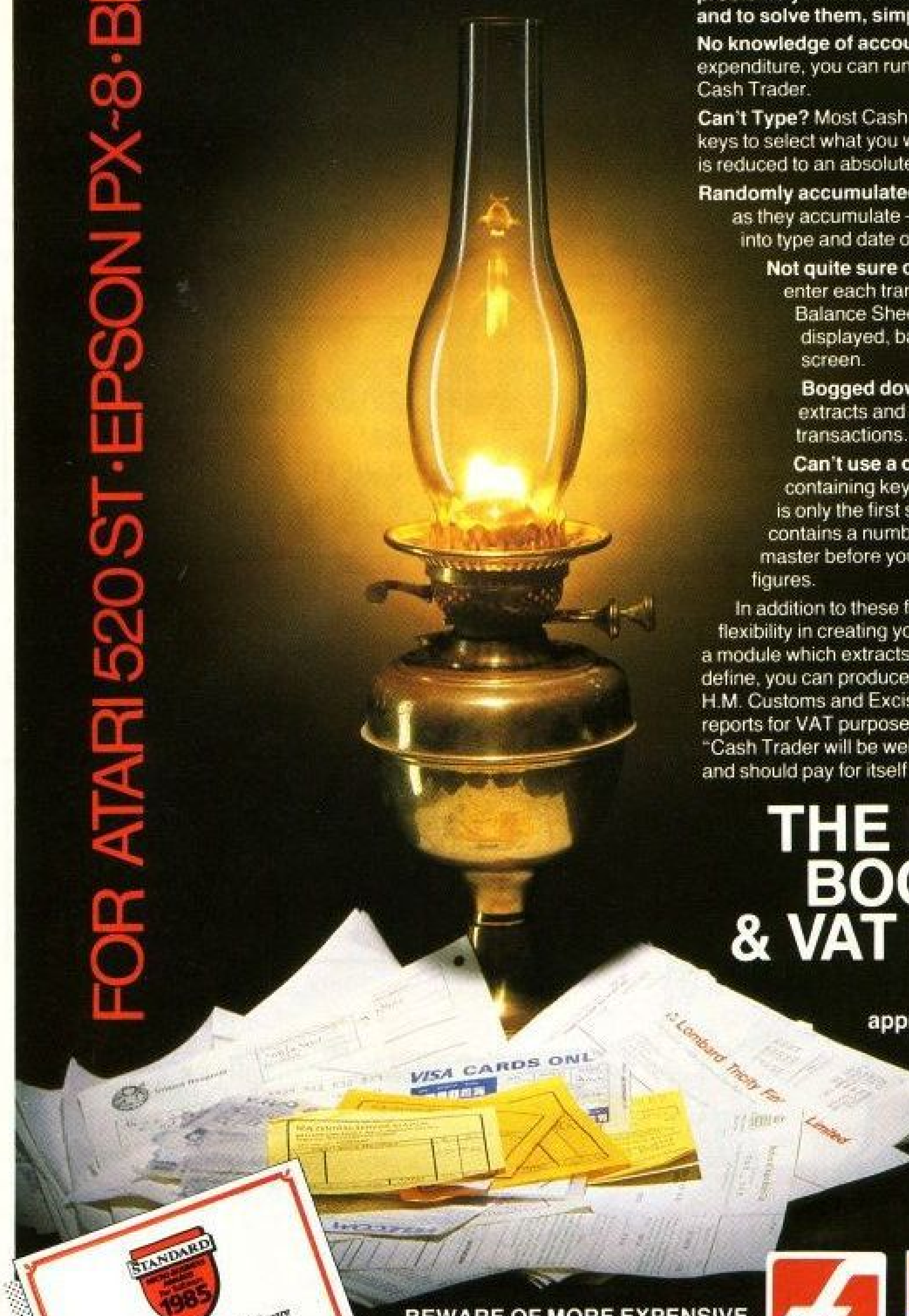
```
10 MEMORY &7FFF:ln=1000
15 PRINT"Please Wait"
20 FOR n=0 TO 783:POKE n+&8000,0:NEXT:PRINT n
30 FOR col=0 TO 7:READ a$
40 IF a$="**" THEN 120
50 v=VAL("&"+A$)
60 z(col)=z(col)+V
70 chk=chk+v
80 POKE &8000+n,v:n=n+1:NEXT
90 READ A:z(8)=z(8)+a
95 ln=ln+10:PRINT"*";
100 IF chk<>a THEN PRINT"Error in line ";ln:STOP
110 chk=0:GOTO 30
120 FOR col=0 TO 8:READ chknum:IF chknum<>z(col) THEN PRINT"Error in column data" ELSE NEXT
130 PRINT"All OK"
140 SAVE"game.bin",b,&8000,&940
150 END
1000 DATA 00,00,00,4C,69,76,65,73, 515
1010 DATA 3A,30,4F,62,6A,65,63,74, 705
1020 DATA 73,3A,4C,65,76,65,6C,3A, 735
1030 DATA 45,6E,65,72,67,79,2E,2E, 710
1040 DATA 01,01,01,30,01,00,0F,1E, 97
1050 DATA 00,04,01,00,64,00,00,0F, 120
1060 DATA 3C,00,87,00,00,00,09,0F, 219
1070 DATA 0E,C8,00,87,00,01,30,01, 399
1080 DATA 00,0E,96,00,CD,91,83,CD, 850
1090 DATA DD,83,06,0E,CD,19,BD,10, 807
1100 DATA FB,CD,2D,84,3A,0B,83,D6, 1047
1110 DATA 03,DC,A2,84,CD,8C,85,CD, 1200
1120 DATA 23,86,CD,2D,84,CD,19,BD, 970
1130 DATA CD,3D,84,CD,E5,85,CD,7D, 1295
1140 DATA 84,CD,3D,84,CD,8F,86,3E, 1074
1150 DATA 42,CD,1E,BB,28,CC,C3,00, 927
1160 DATA BB,3E,01,32,00,80,3E,04, 494
1170 DATA 32,0E,83,21,79,88,22,11, 536
1180 DATA 83,3E,01,CD,0E,BC,01,00, 602
1190 DATA 00,CD,38,BC,3E,01,01,1A, 539
1200 DATA 1A,CD,32,BC,3E,01,CD,90, 881
1210 DATA BB,DD,21,13,83,06,07,21, 637
1220 DATA 17,05,CD,1F,84,06,08,21, 443
1230 DATA 17,11,CD,1F,84,06,06,21, 453
1240 DATA 17,1E,CD,1F,84,06,08,21, 468
1250 DATA 19,01,C3,1F,84,AF,32,0D, 622
1260 DATA 83,32,0C,83,32,0B,83,3E, 578
1270 DATA FE,32,0F,83,3E,02,32,10, 580
1280 DATA 83,21,99,88,22,11,83,CD, 840
1290 DATA CF,86,0E,FF,21,90,C7,11, 1003
1300 DATA 08,40,CD,47,BC,CD,F9,86, 1124
1310 DATA 3A,07,80,32,07,83,3A,0D, 452
1320 DATA 80,32,08,83,3E,01,CD,90, 729
1330 DATA BB,CD,2D,84,C3,3D,84,CD, 1162
1340 DATA 75,BB,DD,7E,00,CD,5A,BB, 1133
1350 DATA DD,23,10,F6,C9,2A,01,80, 890
1360 DATA CD,1A,BC,ED,5B,11,83,01, 896
1370 DATA 10,02,C3,64,84,FD,21,03, 734
1380 DATA 80,CD,48,84,FD,21,09,80, 960
1390 DATA 11,40,00,21,B9,88,AF,ED, 847
1400 DATA 52,FD,46,05,19,10,FD,EB, 939
1410 DATA FD,66,00,FD,6E,01,CD,1A, 950
1420 DATA BC,01,10,04,C5,E5,1A,AE, 835
1430 DATA 77,23,13,10,F9,E1,01,00, 664
1440 DATA 08,09,30,04,01,50,C0,09, 351
1450 DATA C1,0D,20,E8,C9,21,10,83, 851
1460 DATA 35,C0,36,02,3A,0F,83,5F, 600
1470 DATA 16,00,21,40,00,19,EB,21, 412
1480 DATA 01,00,01,06,00,3E,00,CD, 275
1490 DATA 62,BC,21,0F,83,35,C0,CD, 915
1500 DATA 53,85,3A,02,80,4F,3A,01, 542
1510 DATA 80,47,04,04,CD,39,85,E6, 832
1520 DATA EC,28,73,CB,7F,28,1B,CD, 993
1530 DATA 39,85,E6,7F,FE,7F,28,66, 1070
1540 DATA CB,FF,C6,04,77,F5,61,68, 1225
1550 DATA CD,1A,BC,EB,F1,F5,CD,7A, 1467
1560 DATA 87,F1,F5,3A,0C,83,D6,05, 1041
1570 DATA 30,79,AF,32,0C,83,CD,24, 778
1580 DATA BB,D1,21,09,83,06,00,CB, 778
1590 DATA 67,28,11,F5,E5,21,30,83, 846
1600 DATA CD,AA,BC,3E,04,32,0B,83, 821
1610 DATA E1,F1,06,FF,70,5F,B2,CB, 1315
1620 DATA 7A,28,01,7B,E6,0C,21,0A, 571
1630 DATA 83,06,00,EA,24,85,06,01, 547
1640 DATA 11,99,88,ED,53,11,83,FE, 1028
1650 DATA 08,28,09,06,FF,11,79,88, 592
1660 DATA ED,53,11,83,70,C9,3E,01, 844
1670 DATA 32,09,83,3A,0B,83,A7,C0, 749
1680 DATA AF,32,0A,83,21,0C,83,34, 594
1690 DATA C9,CD,43,85,7E,C9,CD,43, 1205
1700 DATA 85,77,C9,F5,C5,11,28,00, 952
1710 DATA 21,E7,7F,04,19,10,FD,09, 698
1720 DATA C1,F1,C9,CD,2D,84,E1,E1, 1467
1730 DATA 21,42,83,CD,AA,BC,3E,01, 856
1740 DATA 01,19,01,CD,32,BC,06,B4, 656
1750 DATA CD,19,BD,10,FB,3E,01,01, 750
1760 DATA 1A,1A,CD,32,BC,AF,32,0C, 732
1770 DATA 83,3A,0E,83,A7,28,0A,3D, 612
1780 DATA 32,0E,83,CD,CF,86,C3,57, 1023
1790 DATA 83,C3,8E,83,3A,0A,83,A7, 965
1800 DATA 28,31,FE,01,21,02,80,7E, 633
1810 DATA 20,16,FE,27,28,25,E5,4E, 731
1820 DATA 0C,3A,01,80,47,CD,B8,86, 793
1830 DATA E1,CB,77,20,16,34,18,13, 696
1840 DATA A7,28,10,E5,4E,0D,3A,01, 602
1850 DATA 80,47,CD,B8,86,E1,CB,77, 1269
1860 DATA 20,01,35,3A,09,83,47,3A, 413
1870 DATA 01,80,80,F5,47,3A,02,80, 761
1880 DATA 4F,CD,B8,86,CB,77,C1,20, 1149
1890 DATA 04,78,32,01,80,21,0B,83, 478
1900 DATA 7E,A7,C8,35,C9,FD,21,03, 1036
1910 DATA 80,21,07,83,CD,F6,85,FD, 1136
1920 DATA 21,09,80,21,08,83,FD,7E, 721
1930 DATA 00,47,FD,7E,02,80,FD,77, 952
1940 DATA 00,FD,7E,01,47,FD,7E,03, 833
1950 DATA 80,FD,77,01,35,C0,FD,7E, 1125
1960 DATA 04,77,FD,7E,02,ED,44,FD, 1062
1970 DATA 77,02,FD,7E,03,ED,44,FD, 1061
1980 DATA 77,03,C9,3A,02,80,4F,3A, 648
1990 DATA 01,80,47,CD,B8,86,21,0D, 769
2000 DATA 83,CB,4F,C4,60,86,CB,67, 1145
2010 DATA C4,53,85,CB,47,C8,7E,FE, 1266
2020 DATA 05,C0,3A,00,80,3C,FE,0A, 707
2030 DATA 20,02,3E,01,32,00,80,E1, 500
2040 DATA 21,4B,83,CD,AA,BC,06,82, 938
2050 DATA CD,19,BD,10,FB,C3,57,83, 1099
2060 DATA 34,C5,CD,CF,86,21,39,83, 1016
2070 DATA CD,AA,BC,C1,CD,39,85,CB, 1354
2080 DATA 7F,20,06,CB,4F,28,02,18, 513
2090 DATA 0A,05,CD,39,85,CB,7F,C0, 932
2100 DATA CB,4F,C8,36,00,61,68,CD, 942
2110 DATA 1A,BC,EB,AF,C3,7A,87,2A, 1118
2120 DATA 03,80,CD,9C,86,2A,09,80, 805
2130 DATA CD,9C,86,C9,3A,02,80,BD, 1073
2140 DATA 28,03,2C,BD,C0,3A,01,80, 655
2150 DATA BC,CA,53,85,24,BC,CA,53, 1115
2160 DATA 85,25,3C,BC,CA,53,85,C9, 1037
2170 DATA CD,39,85,CB,7F,C4,CD,86, 1260
2180 DATA F5,04,CD,39,85,D1,CB,7F, 1183
2190 DATA C4,CD,86,B2,C9,AF,C9,21, 1323
2200 DATA 17,0C,CD,75,BB,3A,0E,83, 747
2210 DATA C6,30,CD,5D,BB,21,17,19, 812
2220 DATA CD,75,BB,3A,0D,83,C6,30, 957
2230 DATA CD,5D,BB,21,17,24,CD,75, 899
2240 DATA BB,3A,00,80,C6,30,C3,5D, 907
2250 DATA BB,21,00,40,11,34,03,AF, 531
2260 DATA ED,52,3A,00,80,47,19,10, 617
2270 DATA FD,E5,DD,E1,AF,DD,4E,00, 1402
2280 DATA DD,46,01,CD,32,BC,DD,23, 991
2290 DATA DD,23,3E,02,DD,4E,00,DD, 840
2300 DATA 46,01,CD,32,BC,DD,23,DD, 991
2310 DATA 23,3E,03,DD,4E,00,DD,46, 690
2320 DATA 01,CD,32,BC,DD,23,DD,23, 956
2330 DATA DD,E5,E1,11,01,80,01,06, 828
2340 DATA 03,ED,B0,E5,3E,02,CD,90, 1058
2350 DATA BB,21,15,01,CD,75,BB,E1, 976
2360 DATA 06,28,7E,E5,C5,CD,5D,BB, 1083
2370 DATA C1,E1,23,10,F5,21,0F,80, 890
2380 DATA 11,00,C0,01,F8,02,7E,CB, 789
2390 DATA 7F,28,03,3E,EF,77,CD,7A, 917
2400 DATA 87,23,13,13,0B,78,B1,20, 548
2410 DATA ED,C9,E5,C5,A7,28,0E,CB, 1288
2420 DATA 7F,06,00,28,03,2F,18,09, 256
2430 DATA 04,07,30,FC,78,07,07,07, 452
2440 DATA 07,4F,06,00,21,E9,87,09, 582
2450 DATA D5,D5,DD,E1,06,08,11,00, 903
2460 DATA 08,7E,DD,77,00,23,7E,DD, 856
2470 DATA 77,01,23,DD,19,10,F2,D1, 868
2480 DATA C1,E1,C9,3E,00,21,00,00, 714
2490 DATA F5,CD,1A,BC,F1,EB,C3,7A, 1457
2500 DATA 87,57,52,49,54,54,45,4E, 692
2510 DATA 20,42,59,20,48,45,49,54, 520
2520 DATA 48,20,57,49,4C,53,4F,4E, 580
2530 DATA 20,41,4E,44,20,4D,41,52, 499
2540 DATA 43,55,53,20,53,48,41,52, 569
2550 DATA 50,00,00,00,00,00,00,00, 80
2560 DATA 00,00,00,00,00,00,00,00, 0
2570 DATA 00,F0,F0,F0,F0,AA,AA,55, 1385
2580 DATA 55,CC,CC,33,33,CC,CC,CC, 1207
2590 DATA CC,F0,F0,1E,87,F0,F0,C3, 1524
2600 DATA 0F,F0,F0,0F,69,F0,F0,3C, 1155
2610 DATA 0F,0F,0F,0F,0F,80,10,40, 283
2620 DATA 20,20,40,10,80,0F,0F,0F, 317
2630 DATA 0F,55,00,22,AA,AA,CC,AA, 848
2640 DATA 99,44,AA,55,22,33,CC,11, 782
2650 DATA 00,0F,0F,0F,0F,F4,F4,F2, 790
2660 DATA F2,F1,F1,F2,F2,F4,F4,0F, 1711
2670 DATA 0F,0F,0F,0F,0F,F2,F2,F4, 803
2680 DATA F4,F8,F8,F4,F4,F2,F2,0F, 1727
2690 DATA 0F,78,E1,78,E1,0F,0F,0E, 749
2700 DATA 07,0E,07,0F,0F,1E,87,1E, 253
2710 DATA 87,F0,F0,B3,DE,D5,BE,E6, 1649
2720 DATA 7E,E7,76,D7,BA,B7,DC,F0, 1519
2730 DATA F0,00,CC,11,EE,77,EE,10, 1072
2740 DATA 60,10,E0,00,C0,01,0E,03, 546
2750 DATA C2,12,86,30,0E,33,EE,33, 748
2760 DATA EE,77,77,77,77,60,30,E0, 1082
2770 DATA 70,33,00,77,88,77,EE,60, 871
2780 DATA 80,70,80,30,00,07,08,34, 483
2790 DATA 0C,16,84,07,C0,77,CC,77, 807
2800 DATA CC,EE,EE,EE,EE,C0,60,E0, 1668
2810 DATA 70,00,07,0C,00,01,0C,0B, 155
2820 DATA 08,03,00,0E,0C,05,0F,06, 74
2830 DATA 0E,06,0D,0F,06,0B,78,69, 290
2840 DATA 0F,0F,C0,90,0B,0D,E0,B0, 790
2850 DATA 0F,16,F0,F0,83,16,70,30, 830
2860 DATA 06,03,40,00,0E,01,00,C0, 280
2870 DATA 0C,00,08,01,08,11,CC,02, 252
2880 DATA 00,FF,FC,F1,EE,FF,FE,F1, 1736
2890 DATA FF,11,FF,FF,88,77,FF,FF, 1547
2900 DATA EE,FF,88,11,FF,FF,00,00, 1156
2910 DATA FF,FF,00,00,FF,44,00,00, 833
2920 DATA 00,22,00,00,00,44,22,22, 170
2930 DATA 00,88,77,FF,00,44,FE,F3, 1075
2940 DATA 88,88,ED,3D,88,55,CB,1E, 1024
2950 DATA CC,99,CB,1E,CC,55,ED,3D, 1177
2960 DATA CC,77,FE,F3,CC,11,FF,FF, 1551
2970 DATA CC,00,00,00,00,00,00,00, 204
2980 DATA 00,00,00,00,00,00,00,00, 0
2990 DATA **
3000 DATA 20948,19082,21617,20363,21748,19481,22334,19678,165251
```

Listing 3 - Room Designer

```
10 MODE 1:BORDER 0:INK 1,26:SPEED INK 2,2
20 WINDOW 1,40,1,21:WINDOW #1,1,40,22,25:MEMORY 16383
30 LOAD "game",32768:level=1:x=1:y=1:FOR n=16384 TO 22944 STEP 820
40 POKE n,0:POKE n+1,0:POKE n+2,15:POKE n+3,15:POKE n+4,18:POKE n+5,18:NEXT
50 tr=0:blk=6:LOCATE #1,1,1:PRINT #1,blk
60 POKE &8000,level:CALL &86F9:PEN 1:LOCATE x,y:CALL &BB8A:adr=15584+level*820
70 i$=LOWER$(INKEY$):IF i$="" GOTO 70 ELSE i=ASC(i$)
80 IF i=&E0 OR tr=1 THEN GOSUB 270
90 IF i=&F0 AND y>1 THEN CALL &BB8A:y=y-1:LOCATE x,y:CALL &BB8A
100 IF i=&F1 AND y<19 THEN CALL &BB8A:y=y+1:LOCATE x,y:CALL &BB8A
110 IF i=&F2 AND x>1 THEN CALL &BB8A:x=x-1:LOCATE x,y:CALL &BB8A
120 IF i=&F3 AND x<40 THEN CALL &BB8A:x=x+1:LOCATE x,y:CALL &BB8A
130 IF i>47 AND i<57 THEN blk=VAL(i$):LOCATE #1,1,1:PRINT #1,blk
140 IF i$="t" THEN tr=1-tr
150 IF i$="i" GOTO 300
160 IF i$="@" THEN POKE adr-14,y-1:POKE adr-13,x-1
170 IF i$="p" THEN level=blk+1:GOTO 50
180 IF i$="s" THEN WINDOW SWAP 0,1:CLS:SAVE "screens",b,16384,7380:GOTO 260
190 IF i$="l" THEN WINDOW SWAP 0,1:CLS:LOAD "screens",16384:GOTO 260
200 IF i$="*" THEN CALL &BB8A:FOR n=adr TO adr+799:POKE n,0:NEXT:GOTO 50
210 IF i$="m" GOTO 330
220 IF i$<>"n" GOTO 70
230 CALL &BB8A:FOR n=adr+760 TO adr+799:POKE n,32:NEXT:WINDOW SWAP 0,1:CLS
240 LINE INPUT n$:n$=LEFT$(n$,40):s=adr+760+(40-LEN(n$))\2
250 FOR n=s TO s+LEN(n$)-1:POKE n,ASC(MID$(n$,n-s+1,1)):NEXT
260 CLS:WINDOW SWAP 0,1:GOTO 50
270 IF blk=8 THEN a=0 ELSE IF blk=7 THEN a=239 ELSE a=2↑blk
280 POKE adr-41+x+y*40,a:POKE &87B4,a:POKE &87B6,y-1:POKE &87B7,x-1
290 CALL &87B3:CALL &BB8A:RETURN
300 CALL &BB8A:WINDOW SWAP 0,1:CLS:INPUT "INK 0";a,b:POKE adr-20,a
310 POKE adr-19,b:INPUT "INK 2";a,b:POKE adr-18,a:POKE adr-17,b
320 INPUT "INK 3";a,b:POKE adr-16,a:POKE adr-15,b:GOTO 260
330 WINDOW SWAP 0,1:CLS:INPUT "Monster no.";mn:INPUT "Which graphic";mg
340 INPUT "X movement";mx:INPUT "Y movement";my:INPUT "Distance to move";md
350 s=adr-(3-mn)*6:POKE s,x-1:POKE s+1,y-1:POKE s+2,(256+mx) MOD 256
360 POKE s+3,(256+my) MOD 256:POKE s+4,md:POKE s+5,mg:GOTO 260
```

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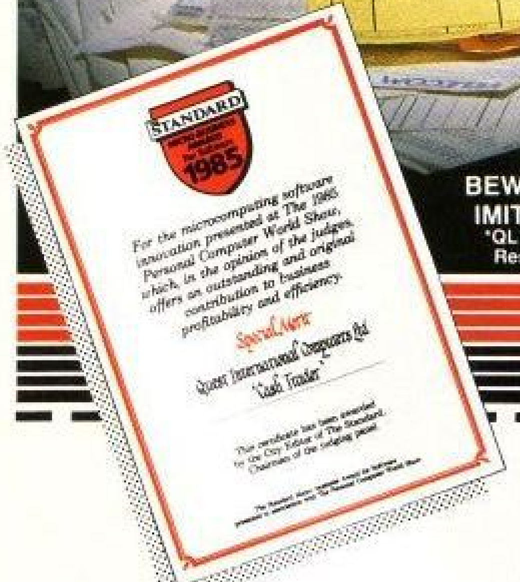
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GOING LOCO

This is the start of a new series about the features of Locomotive Basic. It is aimed at those people who have just started using Basic. However the whole point will be to show the best ways of using Basic and tricks of the trade that we have discovered over a period of time. It will therefore be necessary for anyone using Basic to read this to make sure they are not missing anything vital.

To get the wheels turning we will take a look at the ways in which a program can be examined to see how much memory it uses and how fast it goes.

Reset your machine. What do you mean you don't know how to? Look it up in the manual! Right, now type in direct mode;

PRINT FRE(0)

The number that you get is the number of free bytes available to Basic. When you add a line of program or when variables are used in a program, bytes of memory are gobbled up.

Enter this line of program;

```
1:
```

Okay so it's the most boring program in the world. It's also the shortest. Now repeat the PRINT FRE(0) command. If you subtract the result from the previous number you will see how long this program is. This is the standard way of discovering the amount of memory an added command uses. If you include the PRINT FRE(0) command in your program, so that it prints in one corner of the screen, you can see how much memory is being grabbed while the program is running. It's a useful thing to do when developing a program so that memory gobbling routines can be rewritten or avoided.

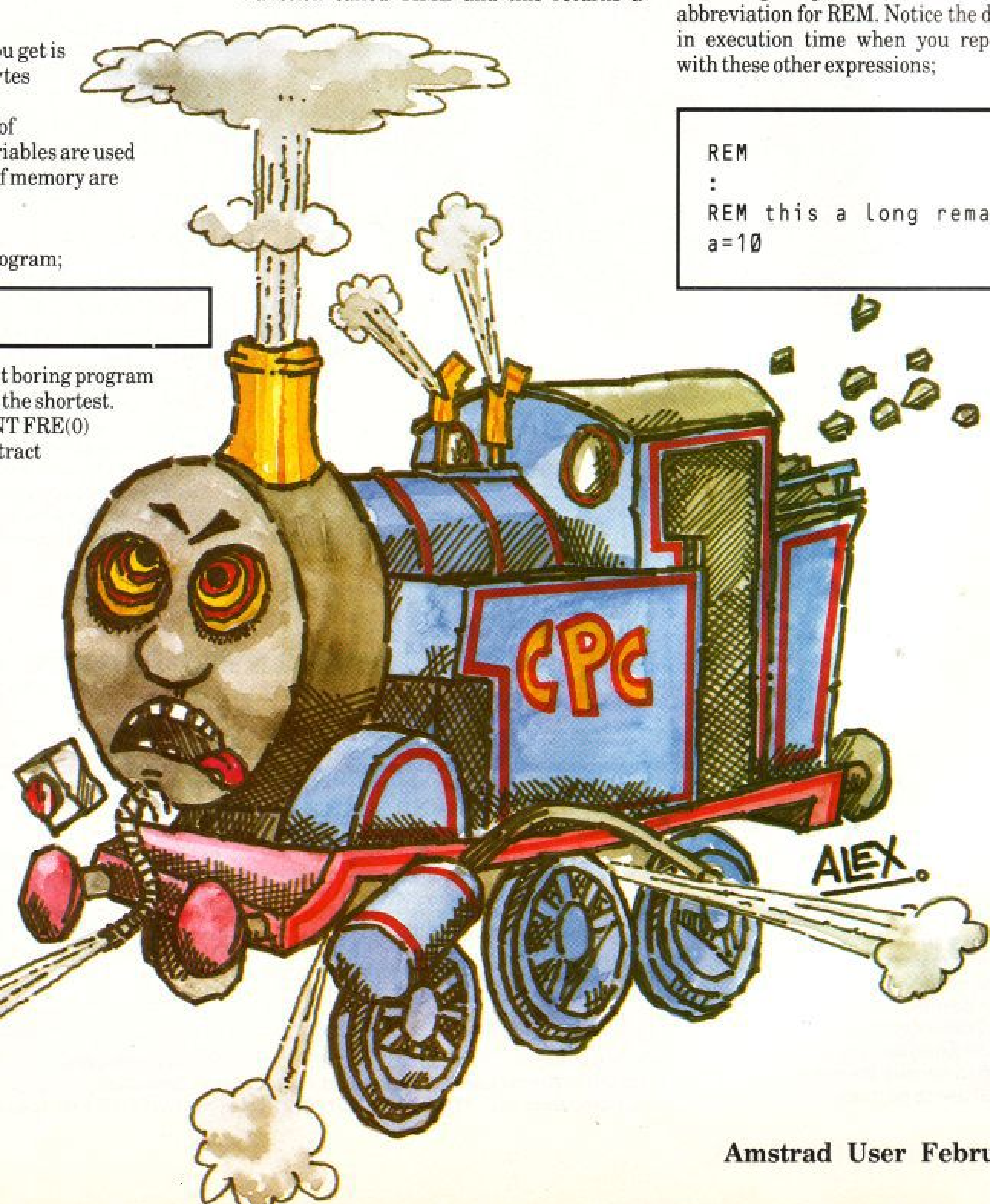
To discover more about Basic it is useful to know how to time a routine or command. Luckily Locomotive Basic includes a function called TIME and this returns a count of the number of 300ths of a second since the computer was last reset, making timing easy.

Here's a short program that times how long a routine using FOR NEXT takes to run.

```
10 t=TIME
20 FOR n=1 TO 1000
30 '
40 NEXT
50 PRINT TIME-t
```

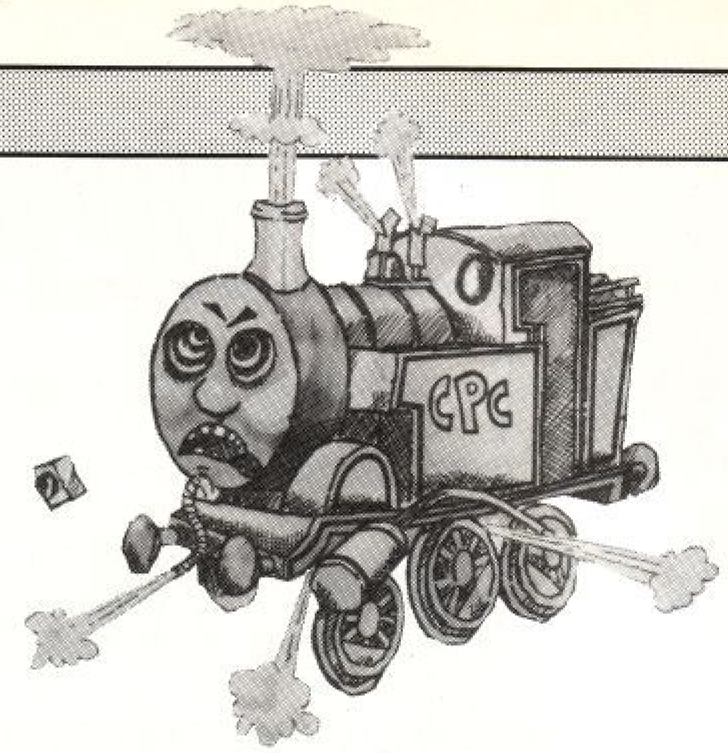
The single quote in line 30 is an abbreviation for REM. Notice the difference in execution time when you replace this with these other expressions;

```
REM
:
REM this a long remark
a=10
```



It is interesting that the colon (:) is interpreted faster than the single quote. The single quote is used extensively to make program listings more readable. Perhaps it would be better to use colons instead?

Now that you know a little about experimenting with Basic, we will start looking at each of the Basic keywords in turn. This will not be a complete explanation, just something that shows the command in use and where possible, any useful tricks we can think of.



ABS

This is for making an expression or variable into a positive number. The two following programs are routines to draw a V shape on the screen. ABS is used in the second program to simplify the routine by using one loop to do all the work.

```
10 ORIGIN 200,320
20 for x=-100 to 0
30 for y=100 to 0 step -1
40  plot x,y
50 next y,x
60 for x=0 to 100
70 for y=0 to 100
80  plot x,y
90 next y,x


10 origin 200,320
20 for n=-100 to 100
30 plot x,abs(y)
40 next n
```

ASC

This function returns the ASCII value of the first character of a string. There are many commands that will accept ASC as an argument. For example it can be used in the SYMBOL and SYMBOL AFTER command like this.

```
SYMBOL AFTER ASC("A")
```

AND

AND combines two values. Here is an example.

```
PRINT HEX$(&x1100 AND &x1001)
```

This shows that bits that are the same in the two values are set to a one in the result, otherwise set to a zero. How is AND used in expressions such as 'if it is raining AND I don't have an umbrella then I'm going to get wet'? The conditions (in this case a weather condition) 'is it raining' and 'do I have an umbrella', have an associated value. The value is minus one if true or zero if false. All of this shows that conditions can be assigned to a variable before being tested. To use the above example;

```
raincoat_needed=(is it raining
AND do I have an umbrella)
IF raincoat_needed THEN put on raincoat
```

ATN

ATN calculates the arc-tangent of a given value. Yawn.

AUTO

This is the automatic line numbering command. It is pretty boring on the 464 but on a machine with 1.1 BASIC its quite good fun to redefine the ENTER key (using KEY DEF 18,1) so that it auto repeats. Then AUTO becomes an alternative way to list your program.

BIN$

BIN$ returns a string of 1's or 0's from an unsigned integer expression and is most useful when developing a program. The following short routine shows the command in action.

```
10 FOR n=HIMEM TO HIMEM+16*8
20 PRINT BIN$(PEEK(n),8)
30 NEXT
```

Run this and then try the following.

```
SYMBOL AFTER ASC("0")
SYMBOL ASC("0"),0,0,0,0,0,0,0,0
SYMBOL ASC("1"),255,255,255,255,255,255,255,255
```

Run it again.

BORDER

BORDER is a very lonely command. It has no relatives and few friends. If you change the border it will stay changed until you reset the machine or change it again. No other command has an affect on it. BORDER has no other affect than to change the border colour.

It does have its uses, though. Any of the 27 possible colours can be displayed. This allows the border colour to be compared with a colour on screen without changing the screen inks. BORDER can also be used to indicate how far a program has progressed when debugging it. To do this, place BORDER commands at strategic positions through the program colour coding for specific routines.

CALL

There are several CALLs that can be made, to useful firmware routines.

CALL &BD19 is a call to the routine that waits for frame fly-back. This should be used just before printing characters to the screen, changing inks, or drawing graphics lines. The purpose of this is to prevent the flicker that usually occurs. CALL &BB81 turns on the cursor and CALL &BB84 turns it off. Both of these have been turned into BASIC commands in the 1.1 version.

CALL &BB18 waits for a key to be pressed. This is an alternative to the standard routine WHILE INKEY$="":WEND.

CALL &BC02 resets all the screen inks back to the default colours (among other things).

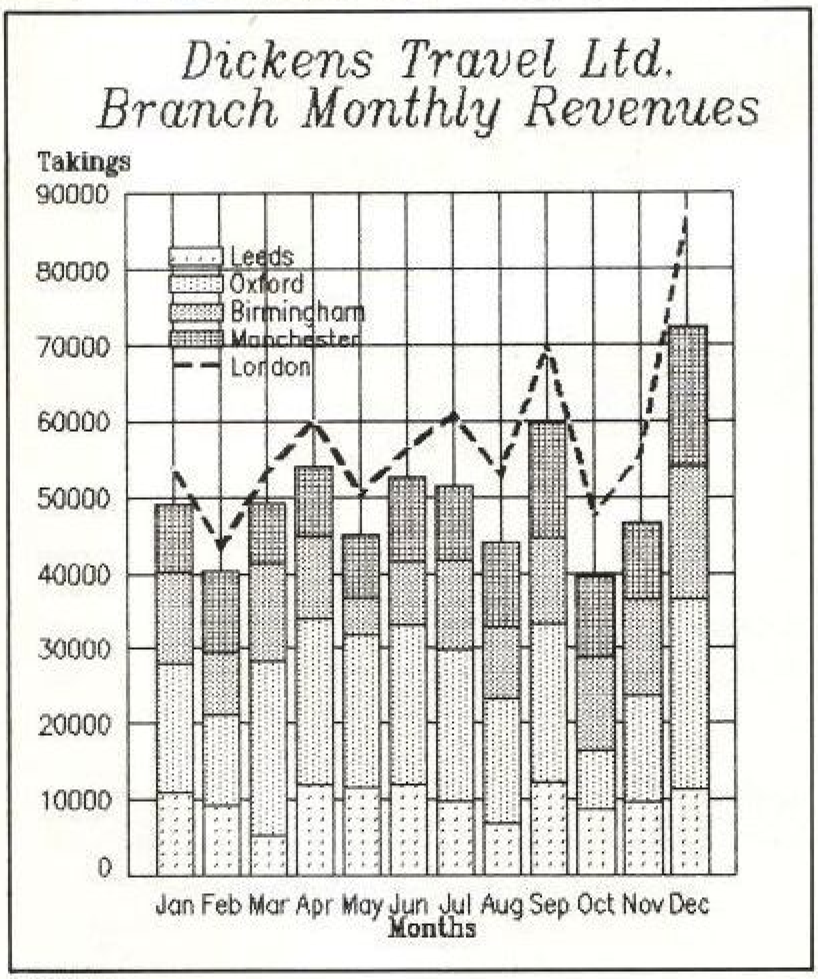
The real job that Call does is to tell the computer to stop working in Basic and to start working in machine code. The number which follows the call specifies where in memory the machine code starts. The effects listed above are the result of the call jumping to a machine code program held within the computers' ROM.

Next month we will continue our saunter through Locomotive Basic, have a look at some of the little used, but very useful, commands and help you beef up your programming. ACU

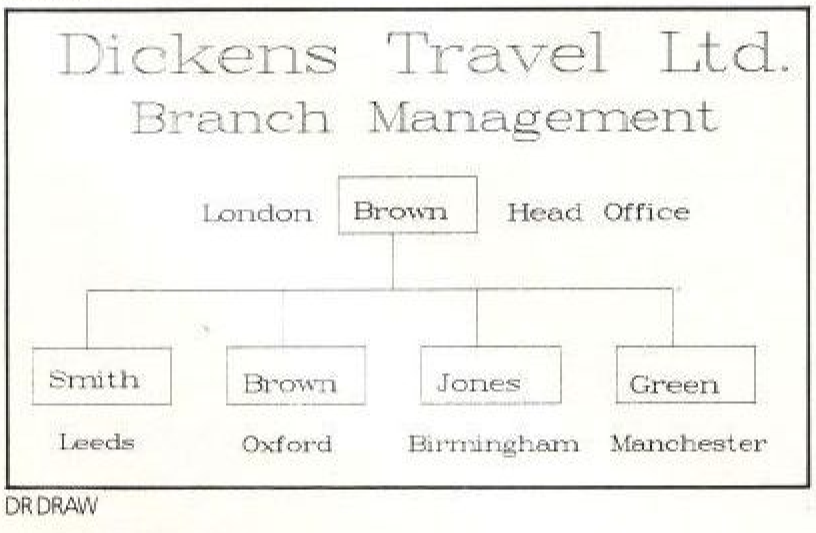
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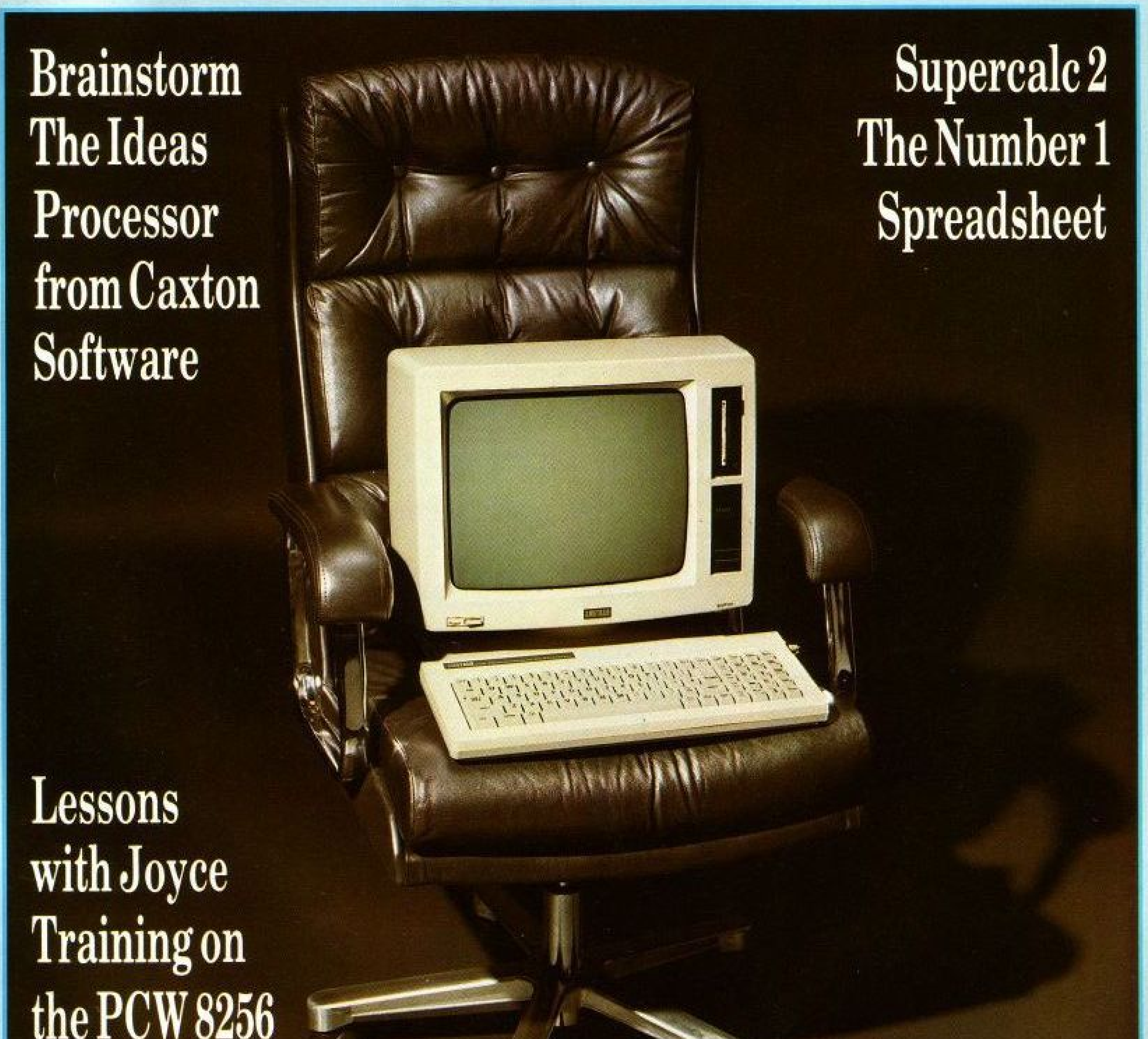
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Amstrad Business Computing

The supplement for Amstrad Business Computer Users

Free
February 1986
Volume one
Number three



Some of the features of the new Mini Office II

With the word processor you can . . .
★ Select most features by menu or embedded commands. ★ Transfer records from database for personalised circulars. ★ Choose from three methods of display: 20 column (double size characters), 40 column, 80 column. ★ Centre, indent, tab, justify and merge text. ★ Insert, copy, move or delete blocks of text. ★ Select two editing modes: insert or overwrite. ★ Search and replace globally or selectively. ☆ Check typing speed in words per minute. ☆ See on-screen real-time clock, plus word and character count.

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Amstrad Business Computing

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The first few months of the PCW8256 phenomenon have done a great deal of good to the industry as a whole, quite apart from the benefits to Amstrad and followers. The PCW8256 has clearly demonstrated that there indeed was a whole new untapped market waiting for the right product to come along, and the fact that someone can earn a few bob from the business has given new heart to many who were beginning to feel that computing was the ultimate mug's game.

The PCW8256 has proven the early suspicion of IBM PC orientated press to be entirely without foundation, yet we don't see too many confessions from those responsible for casting the early aspersions. There is still too much evidence of the press trying to find the Achilles heal in the project, but the runaway sales tell their own story. The old chestnut about software availability rears it's head from time to time; and while this may only serve to underline the dangerous ignorance of many of the writers responsible for features in the National Press to the readers of this magazine who obviously know better, it makes you wonder with just what authority other subjects are reported.

In praise of Brainstorm

With the invention of the term 'outline processor', the software industry has suddenly managed to hang programs like Brainstorm on a convenient hook. Such programs really deserve to be as widely appreciated as the classic wordprocessing/ spreadsheet/ database trilogy.

On the PCW8256, Brainstorm can lurk quietly in the RAM drive just waiting for your summons, and it is in this role as a background scratchpad that it really excels. Congratulations to Caxton for bringing the price into line with reality. I hope that many more owners will thrill to the wonders of this rather handy and unique piece of software.

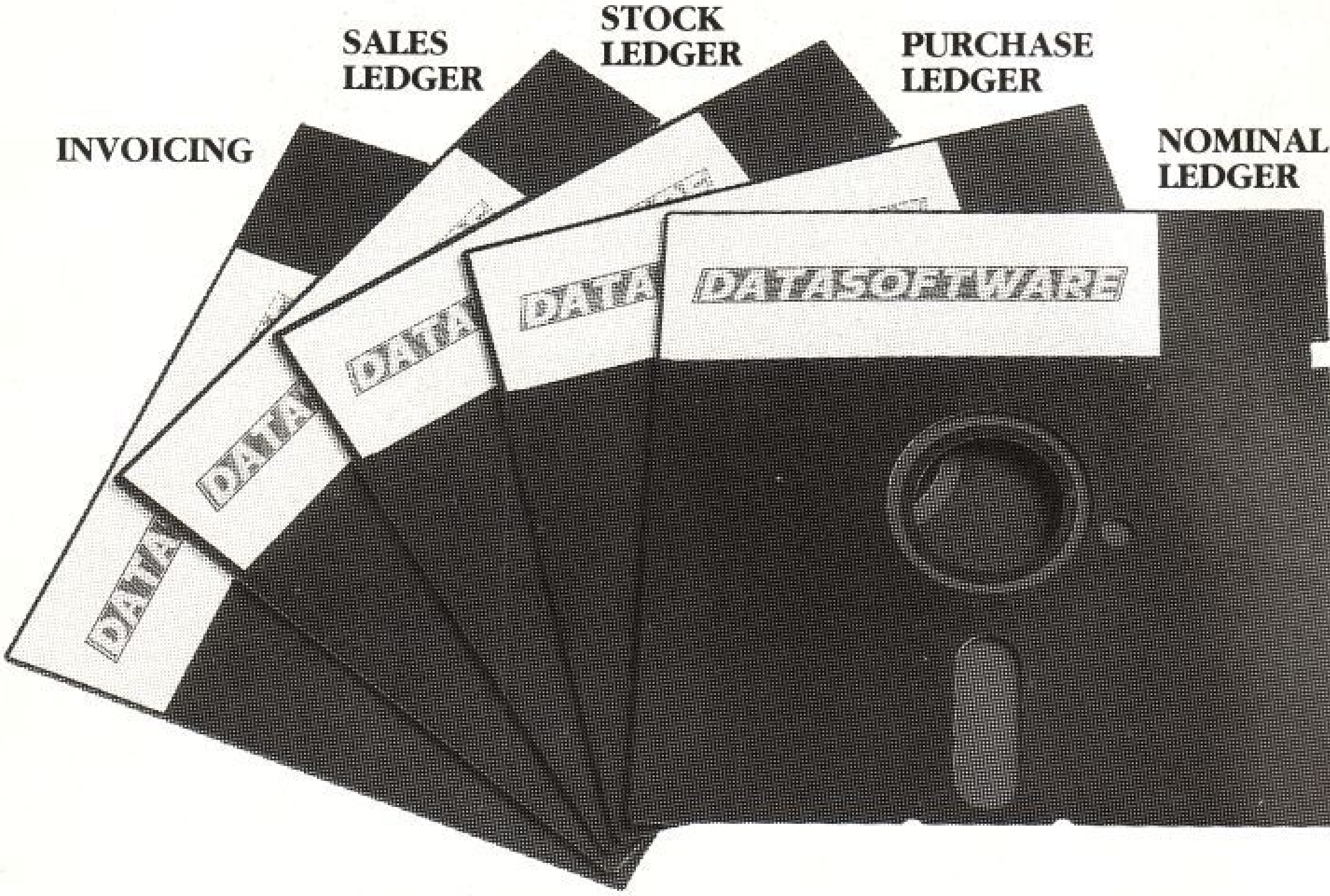
Cracking On

Ian Searle's Cracker has sprouted graphics (what superb graphics rendition you get too!), and it is worth pointing out that it is possible to read in data from a Supercalc2 spreadsheet and display this in one of the various optional graphical forms using the Cracker itself. The late delivery of DR Graph may encourage more users to discover the very singular and interesting features of this versatile program.

Easy transportability of data is what CP/M is all about, and the fact that the major programs can share their data so freely is an added incentive for getting the second 8256 disc drive so that you can get all your working software together on one drive.

William Poel

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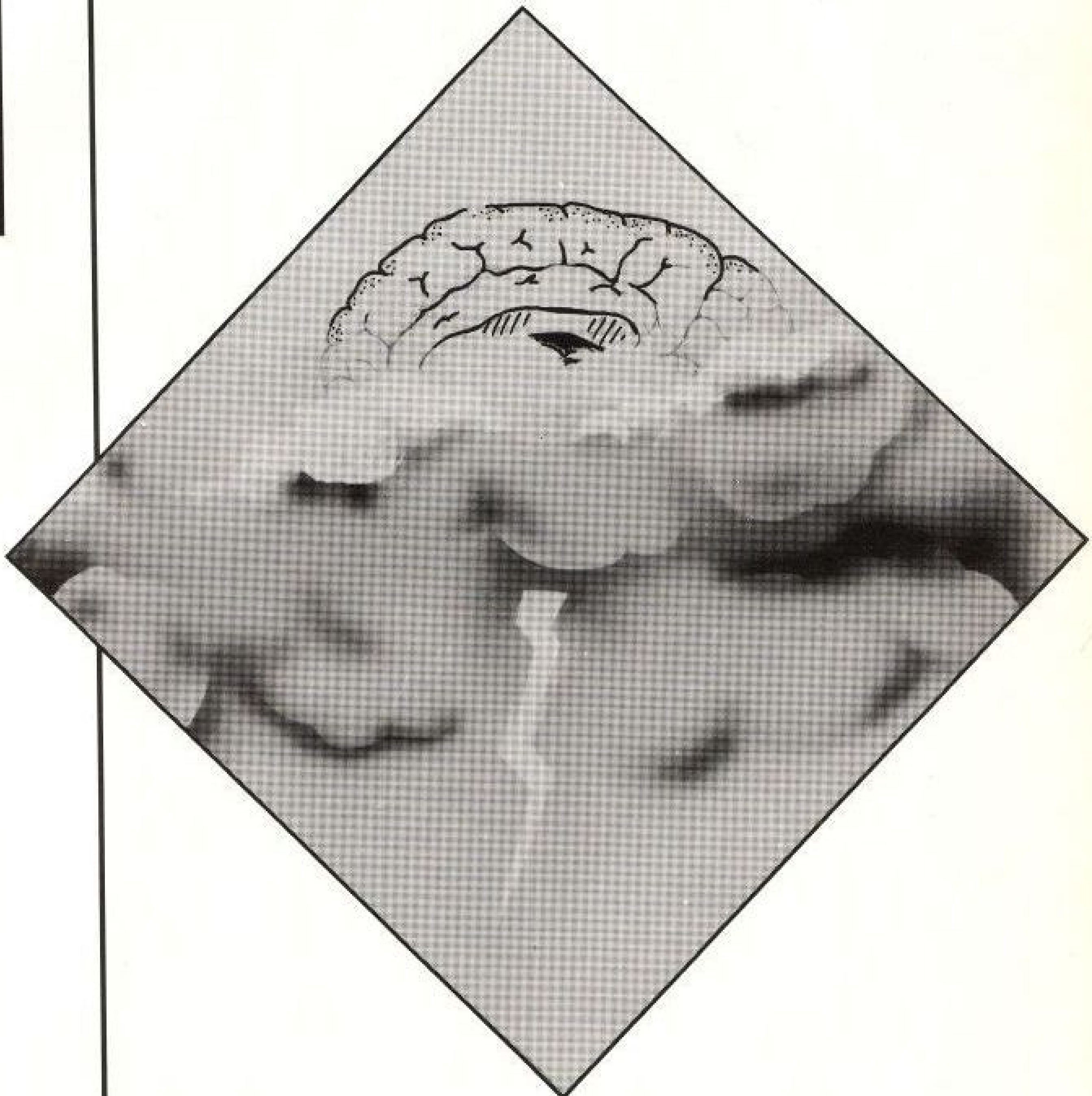
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ABC REVIEW

Brainstorm



You have heard of food processors, word processors and film processors. Steve Godwin examines the latest of the breed, an ideas processor.

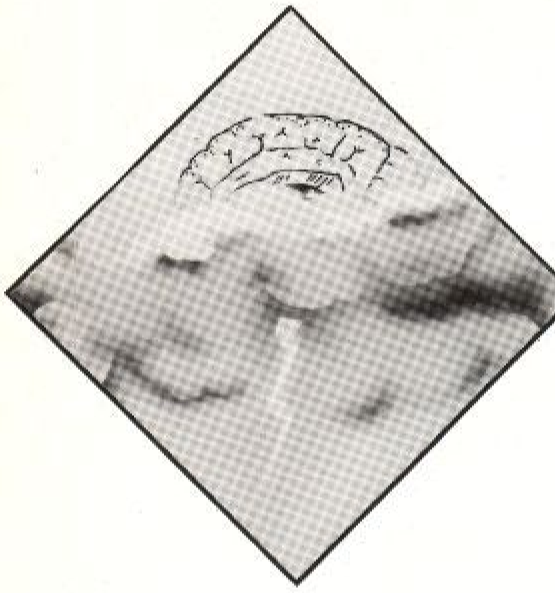
When I first saw Brainstorm, I thought to myself that it was no more than an executive toy for the bored IBM user, that had been ported on to 3" discs in the hope that there were a few would-be executives in the Amstrad market. I am pleased to say that after only a short time I have changed my mind and can see that the number of serious uses of Brainstorm are limited only by the users needs and imagination.

Structured Thinking

In simple terms, Brainstorm works as follows. You start by entering a title. This title may have many sub-headings which in turn may have many sub-headings, which in turn may have many sub-headings which (OK I think the readers get the idea- Ed). This may not at first seem to be very useful but opens up many possibilities. As an example we could have the main title as "THE DAY". Under this title we could have the following headings:-

```
Get up
Go to work
Work
Come home
Go to bed
```

These headings have broadly outlined what is going to happen on a particular day. Now we have done this, we can promote one of these headings to become a title. If we did this with "Get up", we could add these sub-headings:-



```
Get out of Bed
Wash
Get dressed
Have breakfast
Wash up
```

We have now outlined in more detail what "Getting up" entails. Now we can either expand on any of these sub-headings or we can demote the present heading. This effectively takes you back one level and displays the main title with it sub-headings. All the sub-headings will be proceeded by a "-" apart from "Get up" which will be proceeded by a "=" to show that it has descendants, i.e. there is information descending from it, that can be accessed by promoting it.

Assuming we now add all other relevant information, we can then get a print out of our "model". ***(Fig 1)***

Programming

We now have a list of the days activities that can be refered to. You can see that every level has been indented by 2 characters to make the printout clearer. This indent can be set for each level before the print-out to make certain information stand out and you can also set the program to not print certain levels. This can be quite useful for the above application but has far more relevence for other uses. As an example, we could write a program using Brain. ***(Fig 2)***

The first heading just describes the program. The next level of headings describes what each section of the program does, such as initialise the variables or plot a point. The next level of information is the program itself, and finally some of the program lines have sub-headings that explain what that line does, and in some respects, can be compared to puting REM statements in the Basic. When typing in text, such as these explanation statements, you can type without worrying about line length as Brainstorm automatically adds continuation lines where needed with word wrap if necessary.

The above listing may look a bit unusual and does not look like the type of thing that you could run on the Amstrad. This is where the ability to print out certain levels comes in to play.

Brainstorm has another option called WRITE. This works the same way as print but writes the information to a disc file. Therefore we could tell Brainstorm to write the model to a file called "SIN.BAS" on the disc. When the layout options come up, we could type "--0-". This means don't print the first, second or fourth levels and print the third with no indent. The output would then be:-

```
10 MODE 0
20 COL=1
30 FOR X=0 TO 640
40 Y=200+(SIN(X/100)*150)
50 PLOT X,Y,COL
60 COL=(COL+1) MOD 14
70 NEXT X
80 END
```

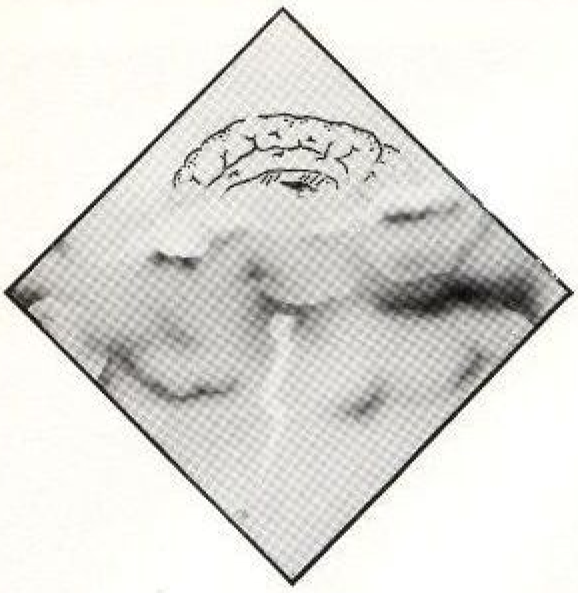
This file could now be loaded from Basic using RUN "SIN" Writing the program using brainstorm has many advantages over writing it using the Basic editor. The first is that the way Brainstorm works, makes it much easier to produce a well structured program, making de-bugging much easier. At the top level menu you can easily see which part of the program handles a particular operation. Another advantage is that the program is very well documented, especially if you type in comments as in the above example as descentants of the program lines, and as a bonus the comments do not take up any program room, enabling the writing of

Fig 1

```
THE DAY
    Get up
        Get out of bed
        Wash
        Get dressed
        Have breakfast
            1 slice of toast
            1 boiled egg
                BOIL FOR 3 1/2 MINUTES
            1 cup coffee
        Wash Up
    Go to work
        Check if car needs petrol
    Work
        Send memo to Paul
        Phone Janet
        Lunch date at 1.30 with Dave
    Come home
        Pick up disc for review from Simon on the way
        Have something to eat
            Whatever is in the fridge
        Write Brainstorm review
    Go to bed
```

Fig 2

```
Basic program to print colourful sine wave.
    Initialise mode and variable(s)
        10 MODE 0
        20 COL=1
    Start loop
        30 FOR X=0 TO 640
            X co-ordinate range is width of screen.
    Draw point
        40 Y=200+(SIN(X/100)*150)
            This line calculates a value for Y based on the sin(X) and
            scales it up to fit on the screen.
        50 PLOT X,Y,COL
        60 COL=(COL+1) MOD 14
            Add one to COL. The MOD 14 makes sure that the colour does
            not go over 13, and resets it to 0.
    End loop
        70 NEXT X
    End program
        80 END
```



longer programs. The block move commands also make re-structuring of the program very easy.

Testing a program can be made easier, you can put in trace lines or other statements that you only need for testing at a different level from the rest of the program and, when you save the program, you can either include or omit these lines with a single key-stroke.

There is one disadvantage to programming Basic using Brainstorm. This is the problem of line numbers. As you can not see all the parts of the program, you can not see at which line a certain routine lies and have to cross reference to find out the correct line. However, there are two ways to lessen this problem. The first is to plan and structure your program before you start and the second is to put every routine under its own heading, where the heading includes the name/job of the routine and the line number at which it starts. Brainstorm lets you place a marker in the text by typing an "÷" symbol. You can then jump around the model to find a routine and return to the marker using "control J" for Jump.

Other languages such as Assembler, Cobol and C which have labels instead of line numbers are ideally suited for development using Brainstorm.

Like Minded

Brainstorm has another function called "Namesakes". This is simply the way the program keeps track of all headings that are the same. If any heading has one or more namesakes then this number is displayed at the start of the line. Using this function, it's easy to see if you have duplicated chunks of code that you can put into a subroutine. Brainstorm lets you jump from one namesake to another with a single keystroke to make interrogation of the file very easy.

Apart from the above examples, as I have said there is no limit to the number of applications that you can use Brainstorm for. It would be very easy for someone at work to enter information to have loaded into their desktop computer when not playing "Roland does something original". The headings could contain addresses, phone numbers, appointments, things to do and any other information that would be useful. The appointments, for example could be sub-divided into months, and then into weeks, which in turn could contain any appointments during that week.

Then using the search facility you could find out when you had an appointment at a certain place and using the namesake function you could see that you had two meetings at the same place and arrange to consolidate them to take place on the same day. I could go on, but I'm sure that you get the general idea.

In general I would highly recommend Brainstorm because of its sheer versatility, however, the price of £49.95 (disc only) is a bit high for the average Amstrad user. However, consolation may be gained from the thought that it would set you back 195.00 ex VAT on other machines. **ABC**

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Joyce Goes to School

The PCW 8256 is designed to be a wordprocessor for the first time user, however learning to use such a complicated beast takes time. If you don't have the time to study the manual, or would rather have the details explained by a human instead of a book you should consider one of a host of courses now being offered. Sally Tyler reports.

For those of you itching to get started on the intricacies of Locoscript word processing and too impatient to tackle the instruction manual -don't despair - help is at hand in the form of a number of well organised training courses.

I was lucky enough to spend the day sitting at the back of the classroom at a Locoscript training session run by Office International in Euston Road.

It was an early start (9.15 am) to what proved to be a most profitable day. Each of the courses at this particular centre accommodate a maximum of eight students allowing some time for a little private tuition.

The day that I attended six of the assembled were women and two were men. We were a mixed bunch, with one common objective - to grasp the basics of Locoscript word processing. Some pupils had word processing experience others were the rawest of beginners. One businessman was more interested in using the system for invoicing rather than for word processing.

With a cup of coffee, pen, paper and PCW8256 to the ready, we were provided with a specially prepared folder outlining the objectives for the day. This was ours to keep and as the day progressed more and more notes were scribbled in, the folder became an invaluable reference tool taking the value of the course beyond its one day. It is surprising how much you do remember. During the course you think that you will forget everything the minute the talk ends. It is only after the course finishes that you appreciate how much you have actually retained. The folder reminds you of the bits which you have forgotten.

Gentle Start

Our first lesson took us into the world of the CP/M Plus operating system and the first procedure that all users must conquer, the art of copying discs. This process was explained in some depth and practised until everyone had mastered the concept.

With Locoscript successfully copied and raring to go, our instructor slowly and patiently took us through the steps of creating, editing, saving and printing our first document.

Each of the exercises we meticulously worked our way through were reprinted in the supplied folder and could be referred to both throughout the duration of the day and repeated if necessary afterwards in our own time.

Busy Afternoon

Lunch came all too quickly and we had only touched on the absolute basics of word processing. We found that the morning session had broken us in gently, and that the three hours left of the afternoon was to prove more concentrated. The agenda scheduled took us into the realms of changing margins, setting tabs, pagination and creating standard templates. All of which were mastered step by step until by the end of the day we had aquired a basic grounding in the joys and frustrations of word processing.

Office International have found through experience that it is not possible to teach all the complex ins and outs of WP just in one day. The course described will provide you with the basics from which you can use the Instruction Manual as a reference guide. For this reason it has been decided to extend the training course over two days, to embrace both a beginners course and an advanced course. The two day course begins in January. It is expected that the first initial session for beginners will cost approximately £109.25 (including VAT), the cost of the second course for advanced users is yet to be decided although it will be cheaper than the first.

Conclusion

Training will always be quite expensive, however cheap the machines get the time of an experienced lecturer is expensive. If your time is equally valuable you will certainly find the courses rewarding, you learn the ropes much faster than by plodding along alone. There is no shortage of pupils. Office International is expanding its programme of courses as rapidly as possible and is currently booked up for the next two months. For more information on the PCW8256 training courses in your area, contact the nearest address office:

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After months of negotiations and wheeler dealing, we have been able to bring off a deal with HoneySoft which enables us to offer the best available comms software for the Amstrad; the suite of programs from HoneySoft.

HoneyView is the excellent HoneySoft Prestel Emulator. This will allow you to use your serial interface/modem setup to access Prestel. As well as interacting with Prestel the program can save pages and display them later. You can also create your own pages using HoneyViews' Prestel editor. A full telesoftware downloader gives you access to a wealth of free programs.

HoneySofts' terminal emulator, HoneyTerm is a general purpose communications program that will allow you to send and receive text files. This is ideal for Telecom Gold; BTs electronic mail service. Received text files can be spooled to disc and printed or looked at later. Programs can be transferred using Xmodem, the international stanard for file transfer.

HoneyComm combines both HoneyTerm and HoneyView in one package. Both programs have pull down menus and are very easy to operate. Each comes with a full manual. The software is suitable for use with the Amstrad RS232 interface, Honeysoft HS-1 and any other interface which is hardware compatible with the Amstrad RS232 interface.

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ABC REVIEW

Supercalc 2

Have you ever spent a Saturday morning trying to decide if you can afford to buy a new car/washing machine/record player or pair of shoes and not been sure if your bank balance can stand it? By the time you have worked out what you owe the credit card companies, the corner shop and subtracted what you need to see you through 'till the pay-day the shoe shop has closed. What you need to take the effort out of this arithmetic is a spreadsheet. Ken Clarke works it out.

The advent of the new Amstrad CP/M Plus computers has brought about interesting happenings in the computer marketplace, apart from the more obvious wholesale dumping of hardware by competitors to stay in the race. The price of software is now dropping to suit the cheaper availability of hardware, the old ten-per-cent rule - which states that customers will not pay more than about ten percent of the hardware cost for software - is one that many software producers are finding hard to break. The less generous would say that the software becoming available is 'last-years-model' and to a certain extent they would be partly justified, many software producers have titles in their catalogues that have become 'wallflowers' since the advent of the more 'sexy' 16 bit stuff, but when all is said and done they are still useful pieces of software, tools to do a job, spanners don't go out of fashion!

The most useful tools from the computing point of view are the generic or general purpose packages such as word-processors, databases and spreadsheets, the pliers of the software toolbox.

What is a spreadsheet ?

This is rather difficult as there is no cosy comparison in the real world. When asked for analogies it is easy to say that a database is 'a sort of electronic filing cabinet' or that a word-processor is 'a sort of glass typewriter' as these refer to things that people know and can visualise which helps to ease the technology gap of expectations versus performance.

The nearest analogy that can be applied to a spreadsheet is that of a ledger or wall planner, a chart which is split into horizontal rows and vertical columns producing individual areas where information can be held - in a ledger it would be accounts information or on a wall chart it would show when staff were taking leave etc. And this is what a spreadsheet is, a large 'electronic sheet' or wallchart, The individual areas where the vertical and horizontal lines bisect each other are called cells. Each cell has a unique co-ordinate -the columns are usually referenced by letters of the alphabet and the rows by numbers - so that the top left cell would be A1. The cells can contain numbers or text as in the 'real life' alternatives, but the real power of spread-sheets comes from the fact that cells can also contain formulae, numerical equations that can reference other cells and constants. Altering the value of a cell will cause a re-calculation of the entire spreadsheet and make it a very powerful plannning tool.

SuperCalc2

The latest spreadsheet addition to the wealth of cheaper professional software becoming available is the well-known (and loved by everybody except Multiplan users) SuperCalc2. The package is available from Amsoft at £49.95, which is a fair bit cheaper than the original asking price of about £200. The program is a comprehensive spreadsheet/ planner package with oodles of features which will keep the number crunching junkies very happy for ages.

The package comes with extremely comprehensive (and bulky) ring bound manuals. On the disc there are pre-installed versions of the program for both the the CPC6128 and PCW8256 computers, the Joyce version has been set up to utilize the larger screen. Also included are the installation programs (if you want to change the default settings), a utility to set up the system time and date and the SDI (no, not star wars) data interchange program which enables the exchange of data between supercalc and other programs such as dBASE II for example.

As with all serious software the source disc should never be used 'in anger' and a working copy has to be made. A program is included which creates the working disc for you, it is a bit fiddly - though not so bad if you have two drives - but at least it protects your investment.

Cell Usage

The maximum size of a SuperCalc2 spreadsheet is 63 columns (A-BK) and 254 rows. Although not all cells can be used at once it does give the flexibility of allowing 'L' or 'T' shaped spreadsheets. Any cells which are left empty are ignored which means that tidy, well spaced-out sheets do not gobble up the available memory. Of the 61K TPA of Amstrad's CP/M Plus about 31K is available for a spreadsheet after SuperCalc2 has loaded. This allows for

about 3000 or so active cells. The amount of free memory is constantly displayed at the bottom of the sheet so you can see at a glance how much is left.

Obviously all the 16,000 possible cells cannot be shown on the screen at once, rather the screen acts as a 'window' on the larger sheet. The window can be scrolled around the sheet under the control of the cursor keys. The screen can also be split horizontally or vertically into two independent windows looking at two different areas of the spreadsheet.

Commands

The main commands of Supercalc are the unfortunately named Slash commands, so called because they are prefixed by the slash '/' character. The slash commands control operation of the spreadsheet as detailed below:

A(rrange)--- Sorts cells in ascending or descending order.
B(lank)----- Removes (empties) contents of cells.
C(opy)------ Duplicates contents and display format of cells.
D(elete)---- Erases entire rows or columns.
E(dit)------ Allows editing of cell contents.
F(ormat)---- Sets display format at Entry, Row, Column, or Global levels.
G(lobal)---- Changes global display or calculation options.
I(nsert)---- Adds empty rows or columns.
L(oad)------ Reads spreadsheet (or portion) from disk into the workspace.
M(ove)------ Inserts existing rows or columns at new positions.
O(utput)---- Sends display or cell contents to printer, screen or disk.
P(rotect)--- Prevents future alteration of cells.
Q(uit)------ Ends the SuperCalc2 program.
R(eplicate)- Reproduces contents of partial rows or columns.
S(ave)------ Stores the current spreadsheet on disk.
T(itle)----- Locks upper rows or left-hand columns from scrolling.
U(nprotect)- Allows alteration of protected cells.
W(indow)---- Splits the screen display.
X(eXecute)-- Accepts commands and data from an .XQT file.
Z(ap)------ Erases spreadsheet and format settings from workspace.

Formulae

SuperCalc formulae can contain up to 116 characters which can include numbers, cell references and mathematical operators



(including the logical operators IF, OR, AND and NOT) as well as a range of standard built-in functions such as AVERAGE, SUM, MIN and MAX, SIN and COS.

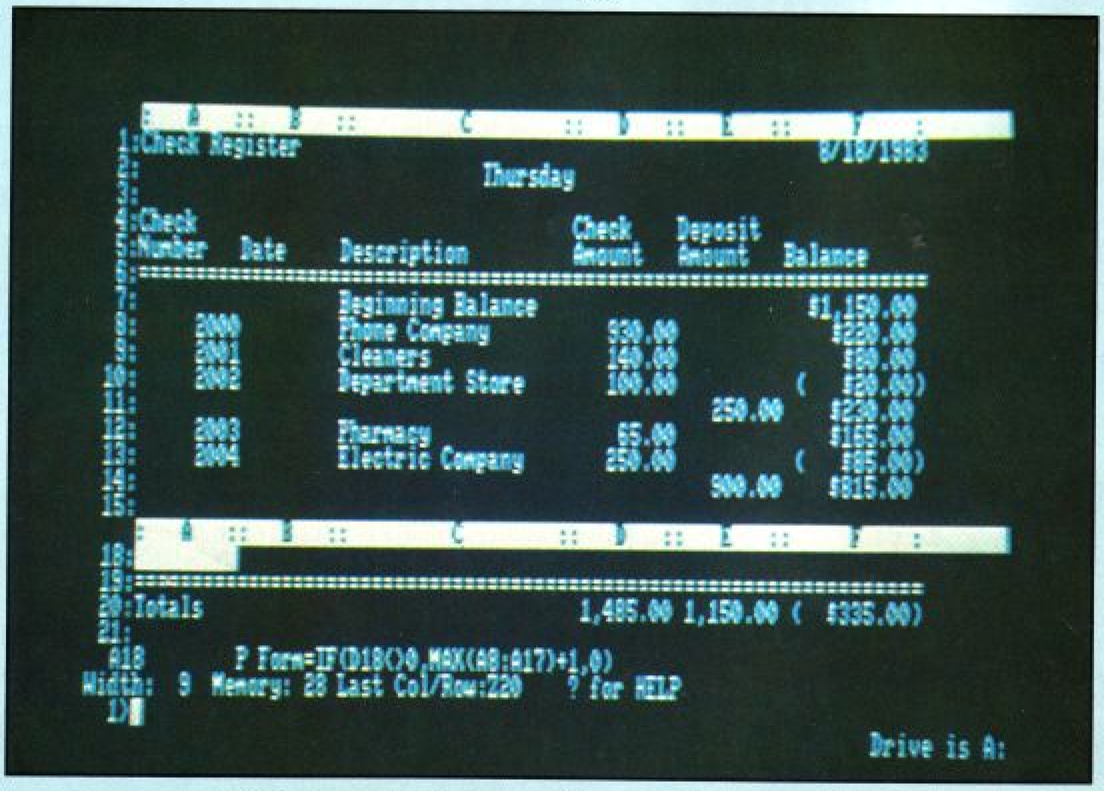
There are some additional special functions available which are nice touches. A lookup table function which will search one column or row for a match and return the value of an adjacent column or row, the returned value can be either numeric or textual - A net present value function which will be welcomed by accountants and financial analysts - and quite a departure for spreadsheets, Calendar functions, which use a modified Julian calendar that ranges from 1/3/1900 to 28/2/2100 and assigns each day in this 200 year period an individual number. The calendar functions can calculate the month, year, even the day of the week for a particular Julian number. The TODAY function will read the current system date and convert it to a standard date entry field. Dates can even be used in equations, adding a constant to a date field will produce as its result the (correct) new date. The only niggle about the calendar functions is the fact that that the program uses the American format of MM/DD/YY rather than the British format of DD/MM/YY.

Hints

SuperCalc uses the technique of overlays to enable a large program to fit in a small user space. Sections of the program are called in as and when required from the overlay files. This means that the program files must always be on the default disc drive. This can be a limitation if you only have one drive but Joyce owners can use the RAM disc to their advantage. Moving the SuperCalc program and help files to the M: drive can really speed up execution of the program. As sections of the overlay file are called in from disc there is usually a delay as the required data is read in, when running from the RAM disc there are no mechanical operations involved (the disc starting, accessing the correct track and then turning off again) and so the access time is nearly instantaneous.

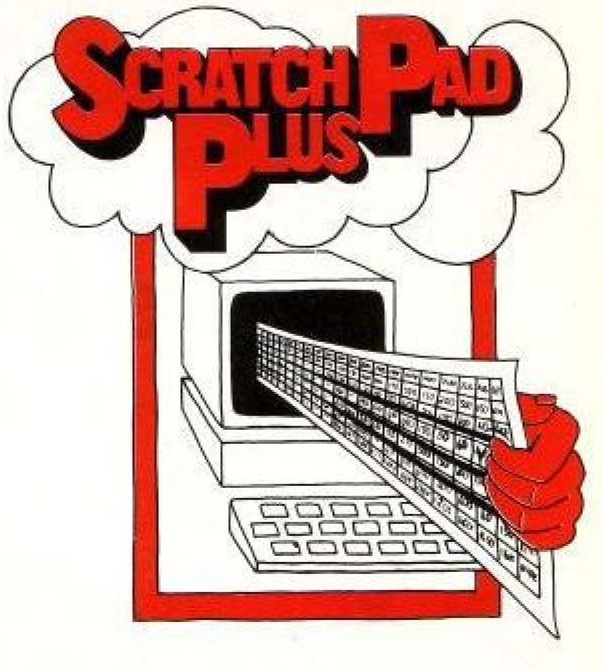
Another particularly useful feature of SuperCalc is the help facility. If you get stuck and are not sure what to enter while using the spreadsheet, pressing the '?' key will bring up an Answer screen. There is a degree of intelligence here as the actual screen displayed will depend upon the particular operation being executed at the time.

This review just about scratches the surface of a very impressive package. The highest praise that can be given for SuperCalc2 is that whenever my manual goes missing I can always find it in the Amstrad accounts department. If the financial department of a large international company uses the program extensively it's certainly good enough for me.



'What a lot of money I haven't got'

What puts the **Plus** in the **ScratchPad** spreadsheet?



ScratchPad Plus is an electronic spreadsheet available for the Amstrad PCW 8256 and CPC 6128 computers. But it's the **Plus** that makes **ScratchPad** the only choice for all professional electronic spreadsheet users.

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Plus

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Anyone doing any serious spreadsheet work will tell you just how frustrating it can be when there just isn't any room left to complete your calculations!

Now that **ScratchPad Plus** is available, a spreadsheet just isn't worth considering unless it uses Virtual Memory!

Plus

FEATURES...

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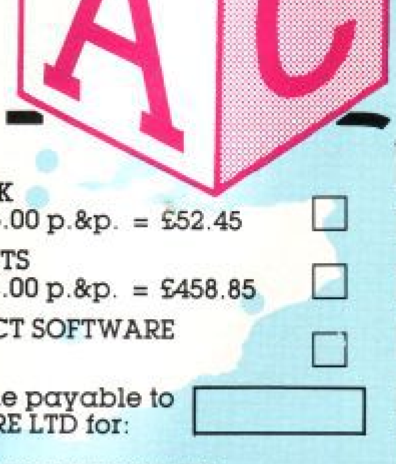
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When I'm Drawing Windows



This month we take a closer look at the screen memory map, the Amstrad's screen mode system, and at some relevant routines provided in the operating system ROM by the helpful people at Locomotive Software.

THE SCREEN

Last month's Basic program allowed the user to investigate the screen by implementing a series of POKES to the screen memory, otherwise known as the VDU RAM, which placed a byte of information directly onto the screen. By using that program in MODE 2 it is possible to work out the layout of the screen in terms of RAM addresses, and thus to visualise the memory map of the 16K screen. Large screens have large maps, and if you have a firmware-specification manual for your particular Amstrad you'll find that the map is printed there at least in part. (eg. page 6.4 in SOFT 158 for the '464). Figure one below shows the memory addresses of the bytes which make up the character squares of locations 1,1 ; 2,1 ; 1,2 and 2,2, together with the three remaining screen-corner bytes. The addresses of other locations can be obtained mathematically by a Basic program, or, as in this article, by a combined Basic and machine-code program, which is rather faster at working out its sums than its Basic rival. The same program also prints out all relevant addresses of the screen and, provided you can spare a yard of printer paper, this makes a useful reference sheet which can be folded into your Amstrad manual. If you want to use this program type in Listing 1 and Listing 2. Listing 1 is the hex-loader routine which you'll need for all the programs this month, so, as you change from one program to another, use DELETE 100-999 to remove those Basic lines which you no longer need. Don't use NEW and don't use LOAD or else all the program lines will disappear! SAVE is safe to use at anytime and the machine-code element of the program is saved along with the Basic. When you RUN listing 1 and 2 a prompt asks for 3 numbers. The first two should be the screen co-ordinates, either in pixels 0-639 for X and 0-399 for Y, or in locations 1-80 for X and 1-25 for Y. The third number given should be 1 if the co-ordinates were pixels or 2 if they were locations. The RAM address of the pixel (or the top-left pixel of the character location) will be printed on the screen and, if you wish, on a printer as well. The print-out of the addresses of the screen-edges (ie: a partial memory map) is accomplished by RUN 290.

In figure one, box 1 is location 1,1 and a mode two character consequently covers 8 bytes. A mode one character covers box 1 and box 2, a total of 16 bytes. Each mode zero character covers four such horizontal boxes, and so a total of 32 bytes is available to be used in the formation of each and every one of these large characters. Mode zero sees all 32 bytes as location 1,1 since they constitute, in this mode at least, one "character square". However, it's mode two which is ideal for screen-investigation work, and the way in which a character fits onto the mode two screen is reasonably easy to visualise. The shape of each Amstrad character is a matrix of dots, as shown in full in the character-set appendix of the computer's manual. Each 8-by-8 matrix is in reality a 64-bit portion (8 contiguous bytes) of ROM and when a mode two letter is printed onto the screen these bits are transfered to a 64-bit portion of VIDEO RAM. However, the 64 bits of VIDEO RAM don't occupy contiguous bytes and in reality a gap of 800H separates each byte. The reason for this apparent madness is really quite simple. The character-bytes in ROM are packed tightly to save space, whereas the screen-bytes are laid out in a manner which suits the way the electrons in the monitor's CRT (cathode-ray-tube) scan the screen. The end result is a screen which is split into 8 blocks, each 2K bytes long. Block 0 runs from &C000 to &C7FF and the other blocks each follow in sequence. Each line of pixels on the screen uses 80 consecutive bytes from a block; the first pixel line using block 0, the second line using block 1 and so on. Pixel-line 9 (the top of character square 1,2) begins to use bytes from block 0 again and the sequence continues down the screen, with 48 bytes of memory being wasted at the end of each block. This type of arrangement is initially confusing, but at least all the memory addresses can be checked on a print-out.

THOSE MODES

Mode 1 and Mode 0 operations muddy the waters still further. The top pixel-line of a ROM character is 8 bits wide, but it appears as 16 bits and 32 bits on the screen in Modes 1 and 0 respectively: the VDU hardware has stretched the character in the horizontal plane. We can now begin to see where Mode 0 stores its 16 colours. With 32 bits of VDU RAM accomodating an 8 bit portion of character, there's 24 bits lying around un-used. Figure two shows how these spare bits give colour to an upper-case M. Memory segment fig.2A shows the contents of 4 contiguous VDU RAM bytes containing, naturally, 32 bits of information. The Gate Array & CRT controller see a somewhat different arrangement: they see the information in a re-sorted manner along the lines of fig.2B. Eight stretched pixels (ABCDEFGH) lie across the width of a mode 0 character. In the example, bits AAAA are set to 1001 and are seen by the hardware as PEN 1001 ie. Pen number 9 from a possible 16 differents pens. Pen 9 has a default INK of 12 (yellow) and so the first element of the letter M is a yellow pixel as shown in fig.2C. The third element C, is pen 0000 which is ink 1, the same ink as the paper colour and so this element won't be seen. When writing characters, the pen ink is held at a constant value (you can't have multi-coloured letters) but if you PLOT in Mode 0 then the ABCDEFGH pixels in fig.2C can each have a separate colour. Similar arrangements are made in Mode 1 where a character in VDU RAM takes on the form AABBCCDDEEFFGGHH and thus can only pull one of four colours out of the palette (Binary bits AA can only count 0,1,2,3 pen-numbers.) All this could be enough to drive a programmer to distraction, for the colour-bits are not only interleaved but scrambled as well! Fortunately the task of separating the colour information from the plotted-point information in the various modes falls upon the operating system ROM. Cue next paragraph...

THE SCREEN PACK

Every Amstrad owner has a screen pack, which is the name given to a group of "jump blocks" in the operating system used to access the VDU hardware (VDU RAM, the Video Gate Array and the CRT Controller). Last month we indulged in the practice of POKEing the VDU RAM directly, and although instructive, the exercise had no value other than dynamically illustrating the VDU memory map and, for colour monitor owners, how a POKE of X&00101010 would have produced a bright magenta pixel in Mode 0. Although you will do the computer no harm by directly accessing the VDU hardware, it is usually far more useful to manipulate these chips via machine code routines incorporating the Screen Pack jumps and, to a lesser extent, the Graphics VDU jumps. The first stage is to put some short m/c routines into RAM just below HIMEM and handle them from Basic using the CALL command. In a later part of this series they will be turned into RSX commands and accompany some more complicated RSXs which need longer chunks of code: this month's offerings can conveniently be attached to the Basic demo programs which illustrate their use.

SCR SET OFFSET &BC05
Uses: Horizontal scrolling.

Calling SCR-SET-OFFSET with a valid number in the HL register causes the CRT Control Chip to impose a hardware change on the the VDU RAM-address representing the top left-hand corner of the screen and this causes a horizontal shift in the whole screen display. The sideways jump which can be achieved by the m/c routine is instantaneous, and a complete scroll (which is a series of sideways jumps) is also fast, even when it is controlled by a Basic loop, as in this program (Listing 3). The value supplied to the m/c routine, N, is the value of the offset (or jump) which is to be added to the VDU RAM-address currently representing the top left-hand corner of the screen. As explained last month, this address rarely remains constant, and it's SCR-SET-OFFSET which is the cause of its waywardness! In the program line 100 sets the screen start-address to &C000 by issuing a MODE command, and thereafter the changing value of N causes the sideways scroll. Line 140 slows the action so it can be seen. Play around with line 130 and observe the effects.

SCR HW ROLL &BC4D Uses: Reverse vertical scrolls.

Vertical scrolls are common in Basic and can be contrived quite easily by setting LOCATE to the bottom right-hand corner of the screen and issuing a PRINT command. However, this screen-pack jump allows scrolling in both vertical directions and acts on the whole screen. Two values are passed to the m/c routine at &8009; B is the direction of scroll (zero for a scroll down, non-zero for a scroll up) and C is the number of lines to be scrolled at one time. The vertical scroll is not a wrap-around scroll like the horizontal one, and a portion of screen is thus cleared whenever the vertical scroll takes place. The m/c routine must be told which paper ink colour is needed for the cleared portion of screen, and the call to &BB99 obtains this information. In this program (Listing 4) the multiple jumps needed to form the scroll are written into the machine-code routine in the form of the L1 loop. Incidentally, this version of the whole-screen scroll uses hardware rolling and so is always fast, and it alters the VDU RAM start address (&C000), regardless of whether the current window is set to some suitably small dimension (which was the ploy used last month to stabilise the &C000 address). This brings us neatly to the next routine, which can be used to keep track of that illusive address.

SCR GET LOCATION &BC0B
Uses: Finding the screen start address.

This program (Listing 5) can be tacked onto the SCR-HW-ROLL of listing 4. Now , a RUN will operate the m/c scroll and then go on to reveal that the screen start-address has been changed to &C0B0. However, if MODE 1 is now typed as a direct command and followed by RUN 140 , the VDU RAM base address of &C000 will appear on the screen: proof, if any were needed, that MODE commands reset the video RAM.

SCR SET BASE
Uses: Creating an alternate screen.

The program written around this jump gives users of both the 464 and the 664 the chance to create a second screen and to switch instantantly from the new screen to the original, located at &C000. It is possible for 6128 users, too, to employ this routine, but since the 6128 has the ability to store four alternate screens in its banked memory, this talent will be highlighted in the later part of this series. The cost of the

routine for the smaller machines is the loss of 16K of memory, normally available to Basic. HIMEM is lowered to &3FFF. In the Basic test listing, (Listing 6), pressing "0" or "1" switches beween the two screens, with the cursor position for screen 0 being transferred to an identical position on screen 1. Providing two independent cursors would lengthen the machine-code a little but since the main use of the double screen is likely to be in the special effects department, the shared cursor shouldn't prove to be a problem.

SCR CHAR POSITION &BC1A SCR DOT POSITION &BC1D
Uses: Obtaining a VDU RAM address

These two useful routines have already been used in Listing 2, now their source listing is shown as Listing 7. Give the routine a co-ordinate and it will pass back a VDU RAM address. Simple? Well, not quite! The operating system thinks in terms of text location co-ordinates which begin at 0,0 and only recognises 200 points on the Y axis of the graphics screen. Six bytes of code iron out this incompatability with Basic and after that, it's all system go...

Next month there'll be a routine to save specified portions of the VDU RAM, a routine that saves a whole screen in less than 16K of RAM, and routines which rotate characters both on and off the screen.

LISTING 1 -- THE LOADER FOR ALL THE PROGS

```
20 MEMORY &7FFF
50 RESTORE 900
60 READ S,L
70 FOR A=S TO S+L-1
80 READ A$:POKE A,VAL("&"+A$):NEXT
```

LISTING 2 -- THE SCREEN ADDRESS FINDER

```
100 M=2:A%=0:REM LISTING 2
110 MODE M:WINDOW 1,20*(M+1),1,24
112 PRINT "REQUIRING HARD COPY? PRESS Y
    OR N"
114 A$=INKEY$:IF A$="" THEN GOTO 114
116 IF A$="Y" OR A$="y" THEN CH=8 ELSE C
    H=0
120 INPUT "X(COL),Y(ROWS),1 if pix,2 if
    chars";X,Y,T
130 IF T=1 THEN GOSUB 200 ELSE GOSUB 240
140 PRINT "X";X;"Y";Y;HEX$(A%):IF CH=0 T
    HEN GOTO 120
150 PRINT #CH,"MODE";M;"X";X;"Y";Y;HEX$(
    A%)
170 GOTO 120
180 :
190 REM PIXELS TO ADDRESS
200 IF X>639 OR Y>399 THEN A%=0:RETURN
210 CALL &8055,X,Y,@A%:RETURN
220 :
230 REM CHAR BLOCKS TO ADDRESS
240 IF Y>25 OR X>80 THEN A%=0:RETURN
250 IF M=0 AND X>20 THEN A%=0:RETURN
260 IF M=1 AND X>40 THEN A%=0:RETURN
270 CALL &803F,X,Y,@A%:RETURN
280 :
290 MODE 2:WINDOW 1,60,1,25:N=0:A%=0:M=0
300 PRINT "Please wait..."
310 PRINT #8,"     AMSTRAD SCREEN MEMORY
    ADDRESSES":PRINT #8
320 PRINT #8,"           X0    X8
    X624 X632"
330 FOR Y=398 TO 0 STEP -2
340 IF N=0 THEN M=M+1:PRINT #8:PRINT #8,
    USING "##";M; ELSE PRINT #8,"  ";
350 PRINT #8," Y ";:PRINT #8,USING "###"
    ;Y;
360 PRINT #8,": ";:X=0:GOSUB 410:X=8:GOS
    UB 410
370 PRINT #8,"....... ";:X=624:GOSUB 410
    :X=632:GOSUB 410
380 PRINT #8:N=N+1:IF N=8 THEN N=0
390 NEXT Y
400 STOP
410 CALL &8055,X,Y,@A%:PRINT #8,HEX$(A%)
    ;" ";:RETURN
420 :
900 DATA &803F,43
910 DATA DD,6E,02,DD,66,04,2D,25,CD,1A,B
    C,EB,DD,6E,00,DD,66,01,73,23,72,C9
920 DATA DD,5E,04,DD,56,05,DD,6E,02,DD,6
    6,03,CB,3C,CB,1D,CD,1D,BC,18,E0
```

LISTING 3 -- SCR SET OFFSET &BC05
Horizontal scrolling routine.

```
DELETE 100-999

100 MODE 1
110 FOR X=1 TO 25
120 PRINT "SCROLL":NEXT
130 FOR N=80 TO 0 STEP -2
140 FOR X=1 TO 20:NEXT
150 CALL &8000,N:NEXT:STOP
900 DATA &8000,9
910 DATA DD,6E,00 : LD L,(IX+0)
920 DATA DD,66,01 : LD H,(IX+0)
930 DATA C3,05,BC : JP &BC05
```

LISTING 4 -- SCR HW ROLL
Fast vertical scroll routine

```
DELETE 100-999

100 CLS:PRINT "SCROLL"
110 B=0:C=25
120 FOR X=1 TO 300:NEXT
130 CALL &8009,B,C
140 STOP
900 DATA &8009,20
910 DATA DD,46,02 : LD B,(IX+2)
920 DATA DD,4E,00 : LD C,(IX+0)
930 DATA CD,99,BB : CALL &BB99
940 DATA C5       : L1:PUSH BC
950 DATA F5       : PUSH AF
960 DATA CD,4D,BC : CALL &BC4D
970 DATA F1,C1    : POP AF,BC
980 DATA 0D,20,F6 : DEC C JRNZ L1
990 DATA C9       : RET
```

LISTING 5 -- SCR GET LOCATION &BC0B
To display the screen start address.

DELETE 140-999

```
140 A%=0:CALL &801D,@A%
150 PRINT HEX$(A%):STOP
900 DATA &801D,18
910 DATA CD,0B,BC : CALL &BC0B
920 DATA 1E,00    : LD E,0
930 DATA 57       : LD D,A
940 DATA 19       : ADD HL,DE
950 DATA
    EB        : EX DE,HL
960 DATA DD,6E,00 : LD L,(IX+0)
970 DATA DD,66,01 : LD H,(IX+1)
980 DATA 73,23,72 : LD (HL),DE
990 DATA C9       : RET
```

LISTING 6 -- SCR SET BASE
Alternate 16K screen routine.

DELETE 100-999

```
100 MEMORY &3FFF
110 B$="SCREEN":N=0:GOSUB 170
120 B$="screen":N=1:GOSUB 170
130 A$=INKEY$:IF A$="" THEN GOTO 130
140 IF A$="0" THEN CALL &802F,0
150 IF A$="1" THEN CALL &802F,1
160 GOTO 130
170 CALL &802F,N:MODE 1
180 WINDOW 1,39,1,25
190 FOR X=1 TO 100
200 PRINT B$;N;:NEXT
210 RETURN
900 DATA &802F,16
910 DATA DD,7E,00 : LD A,(IX+0)
920 DATA B7       : OR A
930 DATA 28,05    : JR Z,L2
940 DATA 3E,40    : LD A,&40
950 DATA C3,08,BC : JP &BC08
960 DATA 3E,C0    : LD A,&C0
970 DATA C3,08,BC : JP &BC08
```

LISTING 7 -- SOURCE CODE FOR SCRCHAR & SCRDOT

```
         : ORG &803F
         : SCRCHAR:
DD 6E 02 : LD L,(IX+2)
DD 66 04 : LD H,(IX+4)
2D 25    : DEC L:DEC H
CD 1A BC : CALL &BC1A
EB       : L3:EX DE,HL
DD 6E 00 : LD L,(IX+0)
DD 66 01 : LD H,(IX+1)
73 23 72 : LD (HL),DE
C9       : RET
```

```
         : ORG &8055
         : SCRDOT:
DD 5E 04 : LD E,(IX+4)
DD 56 05 : LD D,(IX+5)
DD 6E 02 : LD L,(IX+2)
DD 66 03 : LD H,(IX+3)
CB 3C    : SRL H
CB 1D    : RR L
CD 1D BC : CALL &BC1D
18 E0    : JR L3
```

FIGURE 1 ::: PART OF THE MEMORY MAP

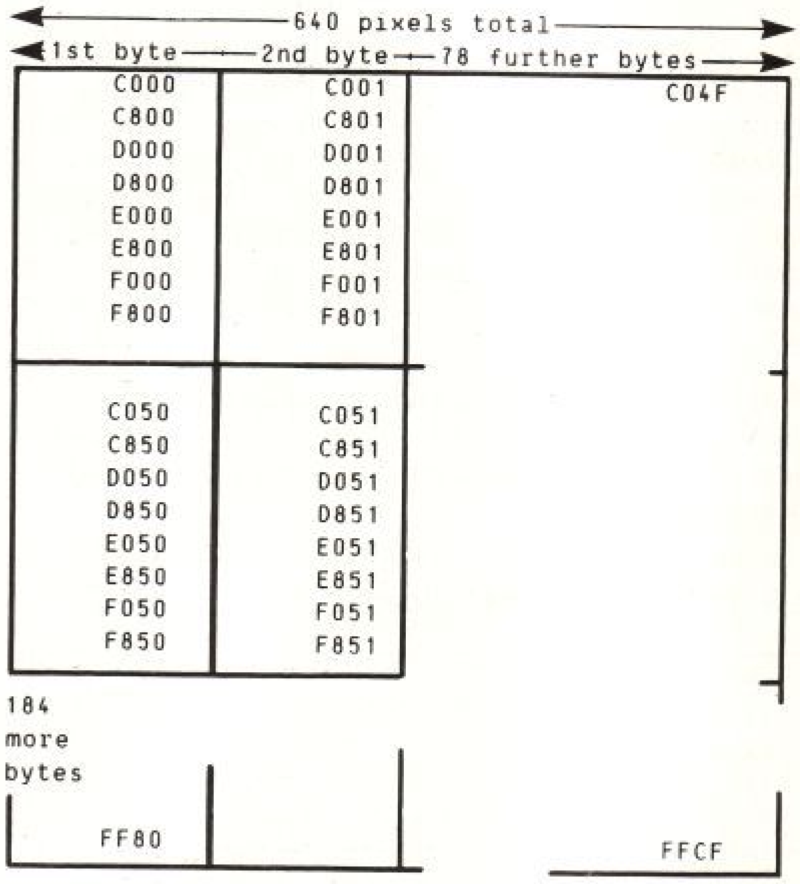
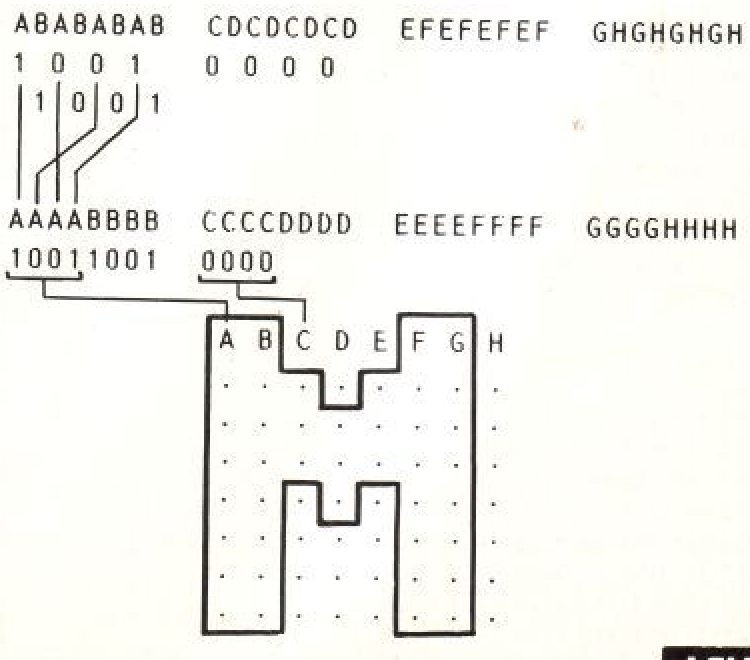


FIGURE 2 ::: COLOUR ENCODING TRICKERY



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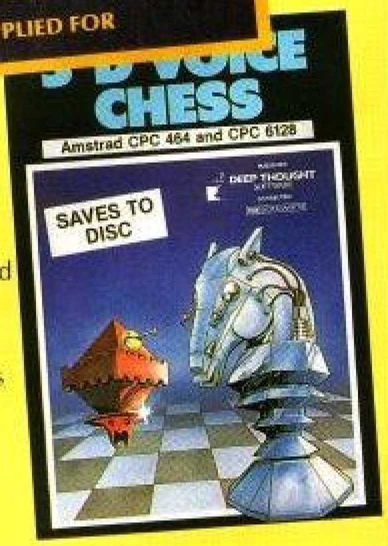
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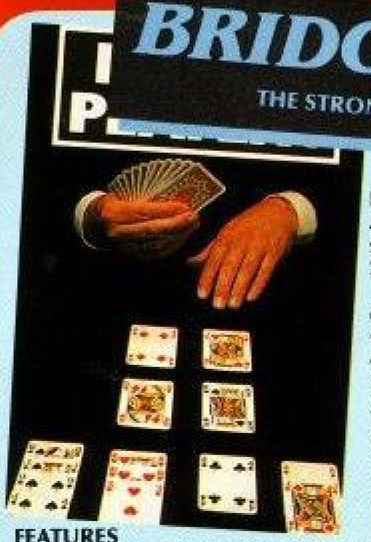
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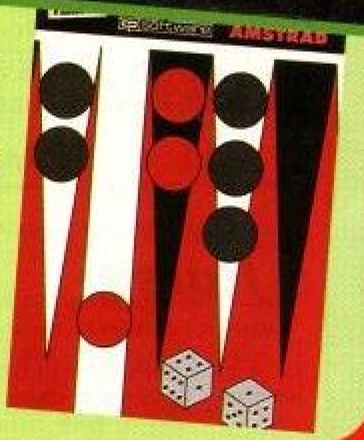
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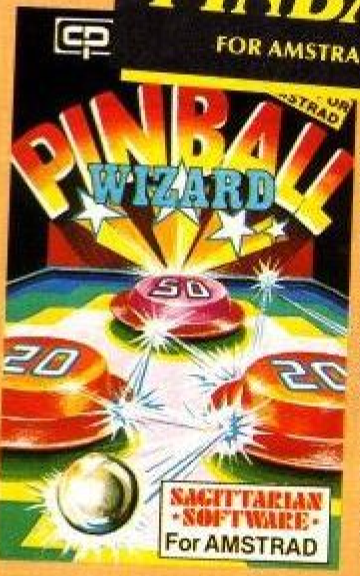
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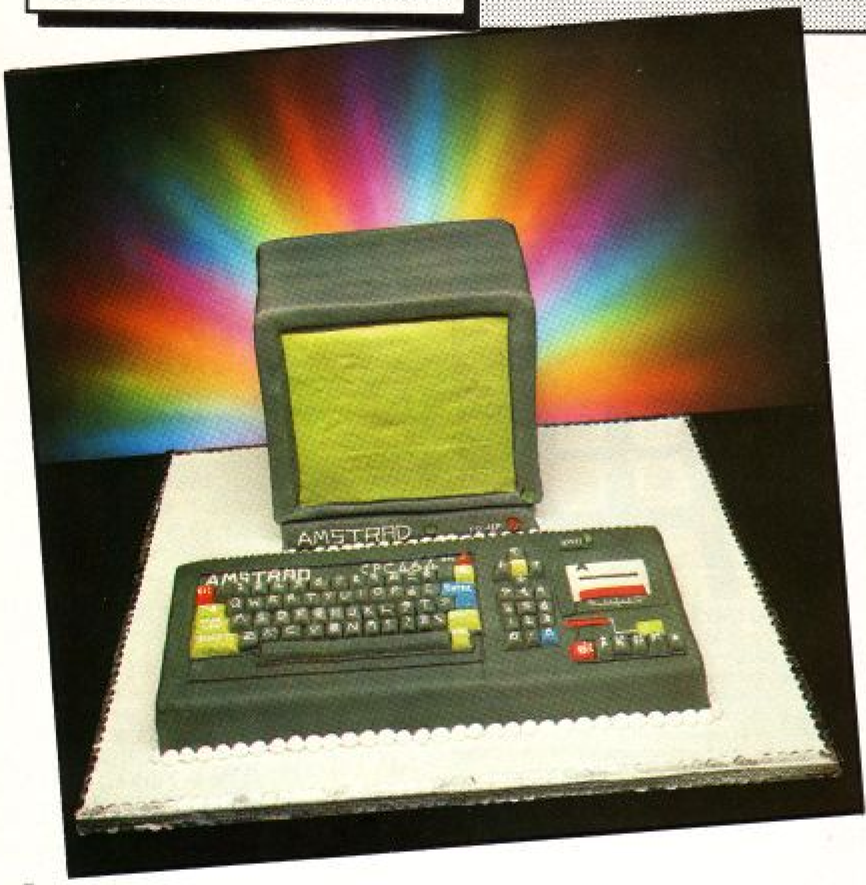
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Rules

1 The winner will be the funniest correct entry drawn on February 28th 1986

2 You may photocopy the form but only one entry per reader is allowed.

3 Entries should be sent to:
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4 The judges' decision is final. No employees of Amstrad, Amsoft or Amstrad User can enter

5 The competition is only open to residents of the UK mainland. (Sorry but the cake would get a little stale if we sent it on a long journey).

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2 SAVE text file	4.9	18.9
3 Re-FORMAT paragraph (85 words)	0.4	15.3
4 Re-FORMAT entire text	2.5	Not Possible
5 Move directly to start of text	under 0.1	2.2
6 Move directly to end of text	0.2	2.2
7 REPLACE 'the' with 'THE' (45 occurances)	1.7	34.1
8 SCAN entire text	2.2	7.2
9 MERGE file to centre of text	4.0	Not Possible
10 MERGE file to end of text	3.8	12.4
11 MOVE 85-word paragraph	under 0.1	6.8
12 PROGRAM LOAD TIME DISC ROM	12.9 Instant	14.6 Not Available

PROTEXT FEATURE SUMMARY

File commands – Super fast Load, Merge and Save, Cat, Print (to printer/screen/file).
Cursor Movement – By character/word/line/paragraph/screen, to start or end of line, to start or end of text, to line number, to place marker, to margin.
Inserting and deleting – Insert/overwrite mode, insert character or line, delete character forwards or backwards, delete word.
FIND and REPLACE – Wildcards, all or part of text, case specific, whole word or part of word, find control codes.
Block commands – Move/copy/delete/save/print/format.
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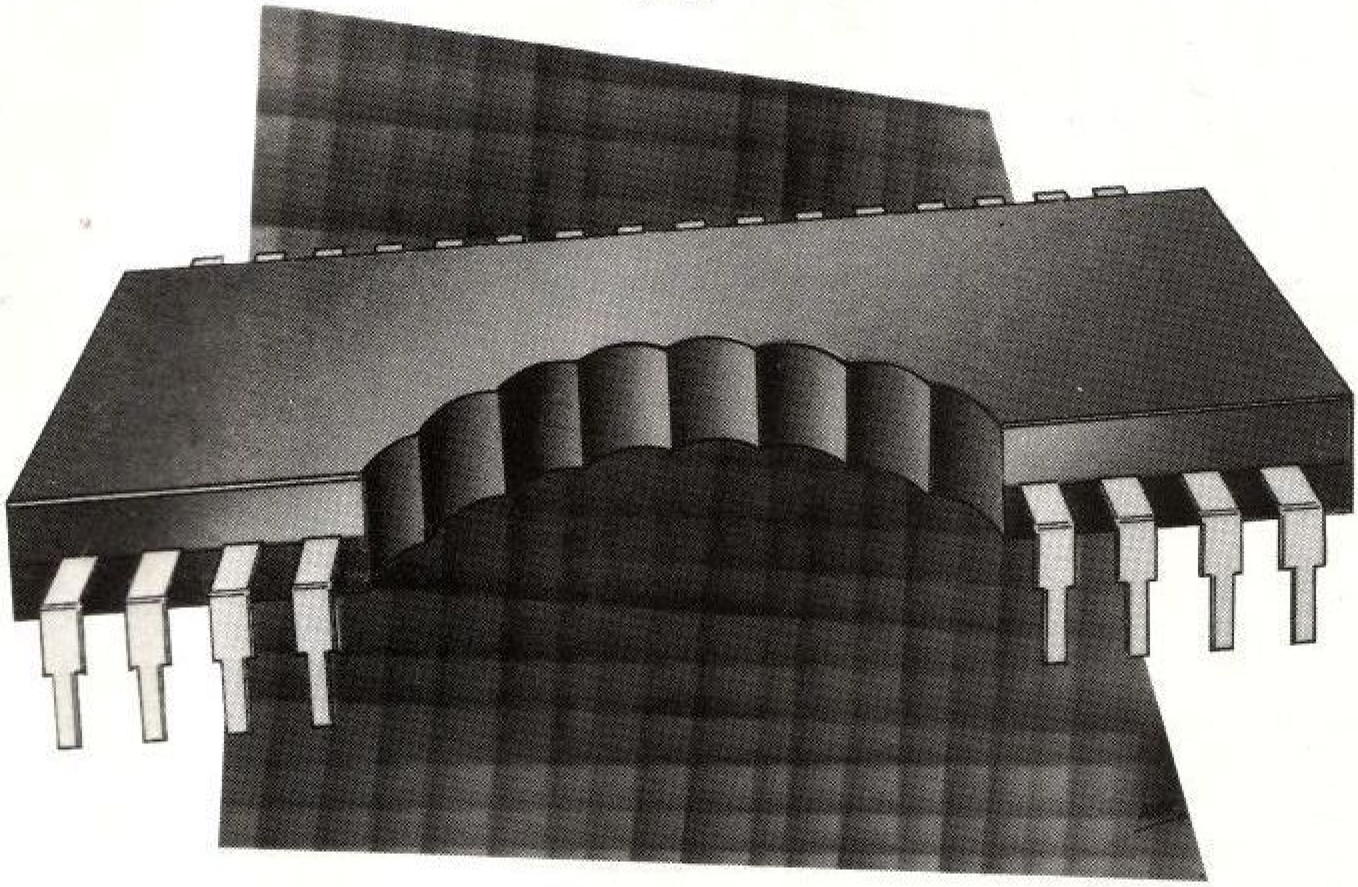
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FIRST BYTE AT MACHINE CODE



Ben Lewis finishes his amble down assembler avenue, off Memory Lane, second left from Binary Boulevard

In the last of this series of articles, I shall endeavour to explain the workings of the F register, introduce the AND, OR and XOR opcodes, and give a short dictionary of commands covered, which is by no means a complete instruction set.

The F register is a strange beast, and nothing else like it exists in the Z80. It is a single register, like for example A, has 8 bits, and can be operated on. The F stands for FLAG, (although it is also called the STATUS register), and its purpose in life is to store bits of information about calculations. Most bits of F have a job, and I have already introduced you to one of those bits - the carry bit (or flag), whose job is to indicate whether there has been a carry in an addition or subtraction. This belongs on the right hand end of the byte (called the least-significant-bit, or lsb).

The layout of the byte is shown in Figure 1. The two bits which are not used, more often than not display random values. Specific commands take into account the value of the bit, eg. ADC. There follows now an explanation of the flags.

FIGURE 1

The Flag Register

Bit 7	6	5	4	3	2	1	0
Sign	Zero	not-used	Half carry	not-used	Parity/overflow	Sub-tract	carry

The SIGN flag will store the result of the sign of a calculation result, ie. If the result is negative the flag is set, otherwise the flag is reset. Note, zero is counted as positive (without violating the rules of mathematics too much).

The ZERO flag will be set if a result is zero, otherwise it is reset.

The HALF-CARRY flag is rarely used, but what it tests is whether there has been a carry from bit 3 to bit 4 of a register, or bit 11 to 12 of a register pair. You are probably wondering what possible use this has. Well, the byte is not the only 'building brick' available to the programmer. Two bytes together, as you know, can be treated as one number and is called a word. If you think that is strange, a collection of 4 bits (0 to 3) is called a nibble (a kind of small byte). It is sometimes useful to think in terms of 'nibbles'.

The PARITY/OVERFLOW flag is rather overworked, for it has two jobs to do at once. The parity of a number is whether it is odd or even. And to make life even more complicated for us, when a result is even parity, the flag is odd (set) and when the result is odd parity, the flag is even (reset). Confusing, huh! What, you may be asking, is the difference between a carry and an overflow? Technically, a carry is an overflow from bit 7 (as already discussed),

but an overflow is carry from bit 6 to 7. This is even more confusing, you will agree. Conventionally, bit 7 is used to store the sign of a number, ie. 01111111 is 127 in decimal, but 10000000 is -128. Since 10000000 is achieved by adding 1 to 01111111, then an overflow has occured, and the flag is set. Note that 10000000 is treated as -128 by some opcodes, and as 128 by others.

The N flag (or subtract flag) is used to indicate whether the last instruction was an addition or a subtraction - almost useless to the programmer, but not to the Z80.

The carry flag I have already discussed in some detail earlier on.

The primary use of the F register is to combine with A for PUSHing and POPping, since single registers cannot be PUSHed or POPped. Apart from that, you can forget about it and treat the flags as separated stores. They are independant after all.

Three of the most notable and neatest opcodes in the Z80 instruction set are AND, OR and XOR. Their job is to alter the bit pattern of the A register, by comparing each bit from A with the corresponding bit of another register or an 8 bit number, and storing the result in A. This is where the similarity stops, and I shall discuss each separately.

AND works by comparing the bits of A with another register or number according to the following rule. If the two bits are set then the result is set, otherwise it is reset. For example, let A be 01001011 and B be 10101010. Then

```
     A  =  01001011
     B  =  10101010
 AND B  =  00001010 ,
```
which becomes the value of A.

So for example, AND 255 will leave A as it was, but AND 0 will set A to zero. It can be used to see if A is zero or not, without using altering the value of any register (apart from F). Note, there is no carry from one bit to another in the process.

OR works according to the following rule. If the two bits are zero, then a zero results else a one results, ie if either bit is set, so is the result. For example,

```
     A  =  01001011
     B  =  10101010
  OR B  =  11101011 ,
```
which becomes the value of A.

So OR 0 will leave A alone, and so will OR A. OR 1 will ensure the number odd, and OR 10000000 will ensure the number is negative.

XOR (which, incidentally, is not Russian, but stands for eXclusive OR) will only return a one if both bits are different, ie only if one OR the other is set, not both. ie

```
     A  =  01001011
     B  =  10101010
 XOR B  =  11100001 ,
```
which becomes the value of A.

XOR 0 will leave A alone, but XOR 255 will reverse the bit pattern of A. This can be rather effective as a graphics command.
Do you remember HEXLD, the hex-loader program I gave you some months ago? Use it to LoaD the following graphics routine.

```
7000  2100C0       LD HL,&C000
7003  110100       LD DE,1
7006  7E       L1  LD A,(HL)
7007  EEFF         XOR 255
7009  77           LD (HL),A
700A  19           ADD HL,DE
700B  D20670       JP NC,L1
700E  C9           RET
```

This is most effectively run in MODE 2. Can you guess what happens if you run it again? Try altering the value in the XOR expression, ie. 255 to different value. By the way, there was no need to perform LD A,(HL) then XOR 255 then LD (HL),A. Another way to achieve this is to LD A,255 then perform XOR (HL), ie A is now compared with THE CONTENTS of HL, which is the byte on the screen. The codes for AND, OR and XOR are given in figure 2.
hex-codes for AND, OR and XOR opcodes

AND A	A7	OR A	B7	XOR A	AF
AND B	A0	OR B	B0	XOR B	A8
AND C	A1	OR C	B1	XOR C	A9
AND D	A2	OR D	B2	XOR D	AA
AND E	A3	OR E	B3	XOR E	AB
AND H	A4	OR H	B4	XOR H	AC
AND L	A5	OR L	B5	XOR L	AD
AND num	E6	OR num	F6	XOR num	EE
AND (HL)	A6	OR (HL)	B6	XOR (HL)	AE

Here is that dictionary I promised you.

FIGURE 3
Dictionary of some Z80 opcodes

ADC

ADC A,r is a single byte instruction. It calculates the sum A plus r plus the carry flag, and the result is stored in A.

ADC HL,s is a two byte instruction which evaluates HL plus s plus the carry flag and stores the result in HL. ADC alters all the flags.

ADD

As ADC but the carry flag is not used in the initial calculation. All the instructions are one byte in length. The carry flag is altered by the final result.

AND

The instruction always acts on A with the result held in A. The bits are compared one at a time, and a 1 will result only if the two corresponding bits are set, else 0 results.

CALL

This instruction PUSHes the return address (the address of the next instruction) and then jumps to the adress dd, only if the conditions are set.

DEC

The register or register pair is decremented by one. With DEC r, the carry flag is unaltered and the zero flag is set appropriately. With DEC s, none of the flags are altered.

INC

Increment the value of r or s by one. With r, all the flags except the carry flag are altered. With s, none are altered.

JP

This is an absolute jump instruction to address dd. Conditions are allowed.

LD

Load is the instruction used to carry out elemental movements of memory from either the RAM or the Z-80 itself (designated by a register or register pair).

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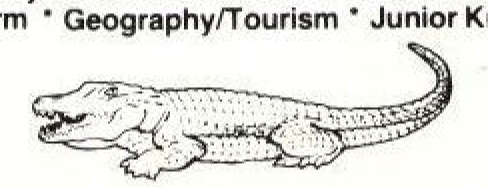
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LD actually means let the contents of the first argument equal the contents or value of the second. The first arguments can either be the contents of a register or an address designated by that register (when it is bracketed). The second argument can be the contents of a register, an address designated by the register or a constant. There are, however, restrictions on the use of this instruction, but none that can't be overcome.

OR

The bits of A are compared one by one with the bits of r and the final result is stored in A. The rule for comparison is that a zero results if and only if both bits are zero, else a one results. OR A will just reset the carry flag.

POP

Remove two bytes from the top of the stack, and load into the register pair, the first byte being low. The stack pointer is automatically adjusted to point to the next byte on the top of the stack.

PUSH

Copy the contents of the register pair onto the stack and adjust the stack pointer accordingly. The high byte is loaded first.

RET

Return if the condition indicated is met. The action is to remove two bytes from the top of the stack, the first being the low byte, and jump to the address indicated by these bytes. The stack pointer is automatically readjusted. None of the flags are altered.

SBC

SBC calculates the result of A minus a number minus the carry flag or A minus a register minus the carry flag or HL minus a register pair minus the carry, and stores the final answer in A or HL. The carry flag is then reset accordingly.

SUB

SUB calculates the result of A minus a register or number, and stores the result in A. The carry flag is set accordingly.

XOR

XOR r compares the bits of A with r one by one, resulting in a one only if the bits are different. So XOR 255 will reverse the bit pattern of A.

Well, that's all folks. I hope I've given you some idea of what machine code is all about. If you are sufficiently tempted enough to attempt to master this high speed language, there are some good books specifically written for Amstrad users. **Get Coding!**

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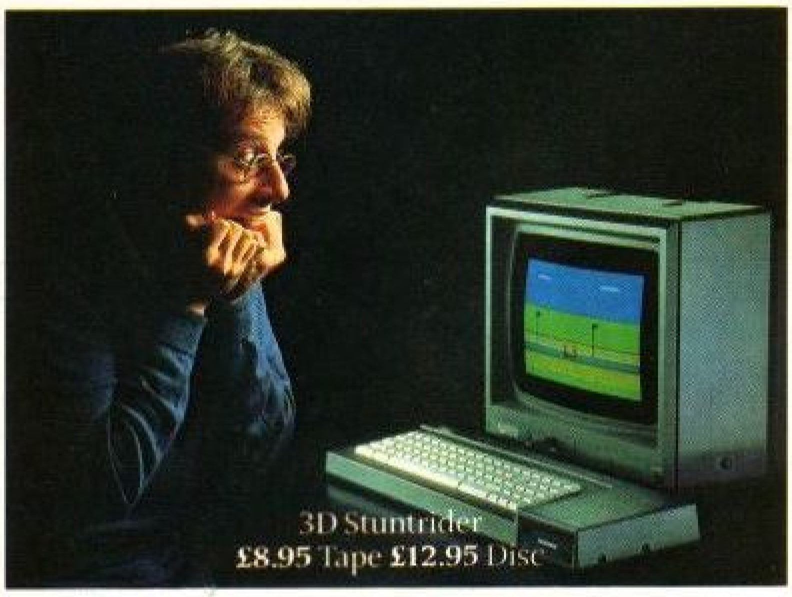
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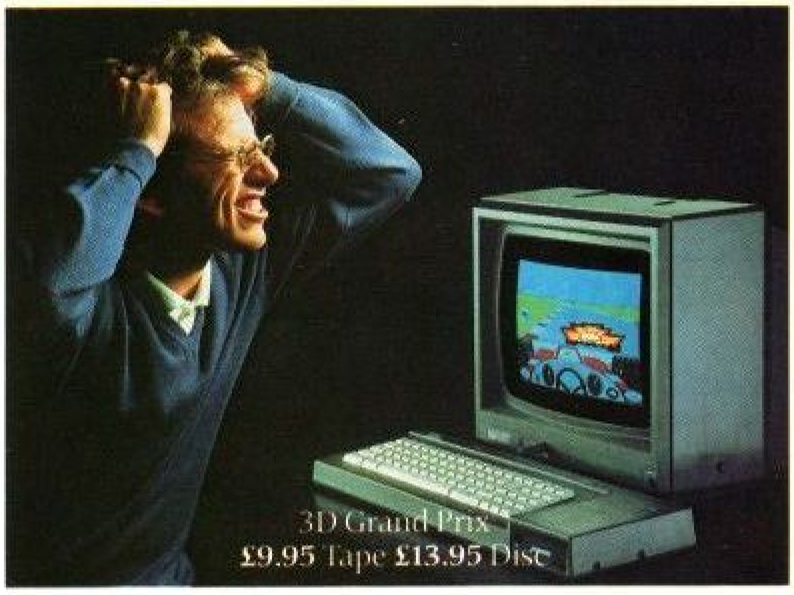
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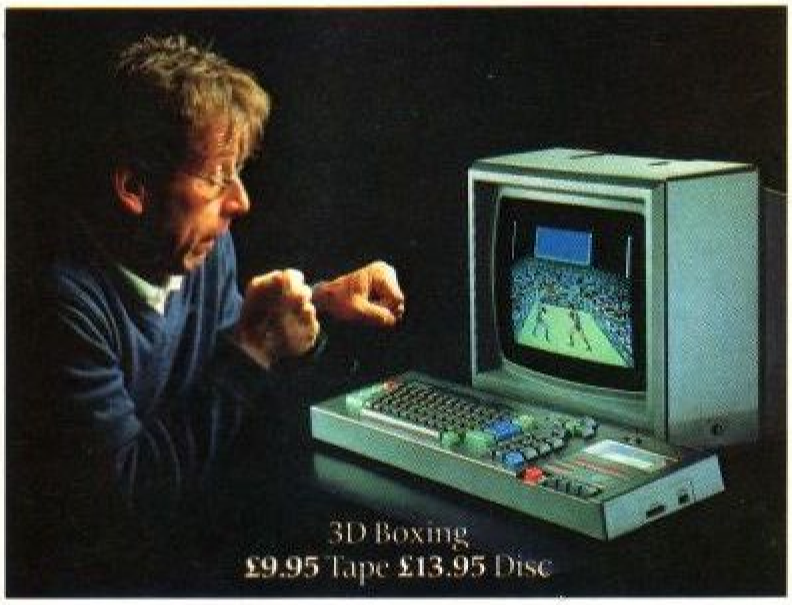


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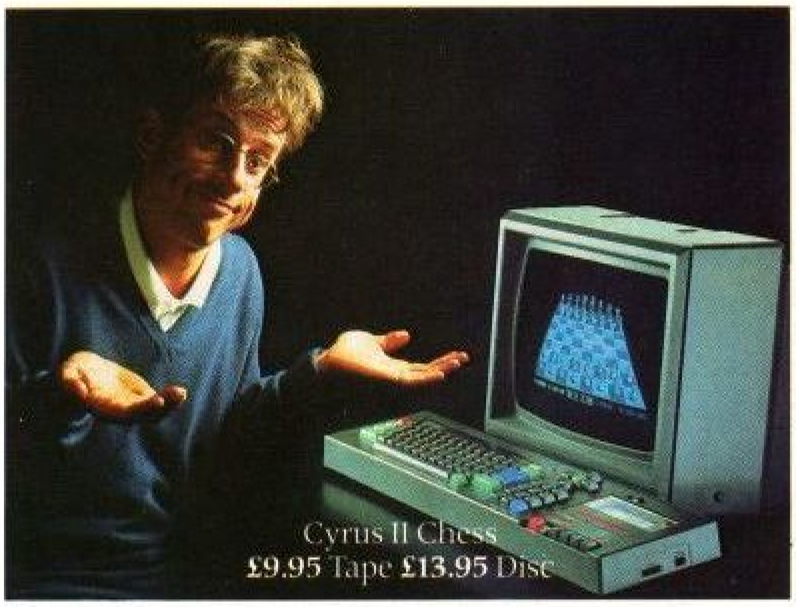


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SOFTWARE REVIEWS

GAME OF THE MONTH

YIE AR KUNG FU

Another one for all you Bluce Ree fanatics out there. Play it inbetween karate-chopping breeze-blocks in half, or drop kicking bowls of solidified custard. You (played by a character with the unlikely name of Oolong) kick, punch and generally inflict grevious bodily harm on a variety of foes who ain't much more civilised.

The cast in order of appearance are:

Some great lardball called Buchu who is able to fly through the air with the greatest of ease, thereby giving you a wonderful target if you hand him a flying kick in his guts. He is unarmed, but the next one isn't.





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The next one is a she; called Star. Her forte is lobbing shuriken at you and kicking you in the head. For the uninitiated, a shuriken is the cack-handed knife-throwers throwing knife; a lot like a sharpened sheriffs' badge.

Seen a nunchak before? Can you pronounce it? Do you care? Well, the next opponent has one and he's bloomin' good with it. Whap, chop, crunch, game over. Exprenation of Oliental terms: a nunchack is like two truncheons handcuffed together at the end. Some versions have three sections, this one has two to keep the graphics easy. Originally used for flailing rice and capitalist swine.

After this little lot, you get to face someone with a BO. This has nothing to do with underarms and is in fact the Japanese version of a quarterstaff. Even if the Japanese are short-staffed, it hurts if someone belts you on the noggin with it.

O.K. Now for some real lo-tech stuff. The fifth opponent is armed with nothing more complicated than a good, old-fashioned club. Eat your heart out Buck Rodgers. I just love all this barbarism!

Yes, it had to be there. Beware the Samurai! Just like Shogun, Heeeya! One moment while I mop the cup of tea off the tabletop. Yes, the old Samurai with his diasho (that's a sword to you, noodle) is out to convert the innocent into sliced salami; chop-chop. A charming fellow, I wish I had a daughter so's I could forbid him to marry her.

The penultimate goon is armed with tonfa. These are a bigger version of the nunchak and, obviously, hurt more. They also reach further than you would like, so manoeuvres requiring the lowering of the head and protection of the butt are essential. Sounds a bit like a job at Amstrad...

Then there is the grand master, he does all that you can do and better. If I ever catch hold of him, you will hear of it. The report will be preceeded by one of a flying pig over Enfield. I don't know what his speciality is but it will probably take me a long time to find out.

What can poor little innocent you do to avoid being converted to minced poor little innocent you? The preferred method is to run like hell. Unfortunately this results in you getting caught in the corner and having your living daylights beaten out.

Necessity (or a glance at the instructions) reveals that pushing up on the joystick (or whatever key you defined) causes you to leap up and over in the relevant direction. This puts the opponent off guard. Doing logical things like pushing the fire button causes much violence to be inflicted; usually at air but occasionally on the foe. All you have to do is get your timing right and remember which one of the ten possible offensive strikes matches up with which particular bend of the joystick.

The strange thing with this particular brand of punch-up game is that it sorts out which way you are facing, thus leaving you free to decide how and where to land the foe a fourpenny one.

Fourpenny ones are landed with the relevant sound effect; a woosh if you miss and a hearty whack if you get him in the etceteras. To make it easier to judge if you are hitting or not, the site of impact is marked by a red flash. Hits on you form a black mark (not permanent in either case).

The characters are formed in a colourful (if a bit too cartooney) fashion. The outline is enhanced a bit by a black border round all the characters.

The background comes in two flavours: Mountain or Temple, both equally well done. The foes pay little attention to the Gods and fight equally well in the temple or on the mountain. The Gods either are not watching or are staying out of the way.

I prefer this one to 'Way of Exproding Fist' but would have dearly loved the option of having the second player control the foe instead of taking turns at the same game. The only black mark on it is the speedloader, which will cause loading problems with 664's and 6128's. This though, is a game which is worth cracking the loader for.

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SEEK AND YE SHALL FIND...

Into adventures with Bill Brock

In the beginning...

Starting to write a regular adventure column after a magazine has already found its feet and the computer it is dedicated to has already come of age is a little like 'taking coals to Newcastle'...

Having said that, one realizes that even in Newcastle, people still have coal fires. The number of Amstrad users is growing all the time and some of the adventure games that have been around for months (even years) are well worth a second look.

This column will cover the whole spectrum (Amstrad?) of adventure gaming, how to do it, what's new on cassette and disc, what adventure aids to look out for and which book to read, there may even be a hint or two from time to time.

If you feel like writing to us and asking questions or just telling us what you like then feel free, (Oh Brock what are you letting yourself in for? - Ed) we may get round to publishing our own 'ten best adventures' based on your votes - heavily biased by my casting vote of course. Joking apart, if you write in, include your phone number, you may find yourself on 'the hot line'.

The Mists Cleared...

For those that are new to adventures and even those that have played...and faltered - what is an adventure and where do you start?

A good adventure is like finding yourself in a strange place, with some idea of what you must do but no idea how to do it! This scenario may be the beginnings of a treasure trail, a romp in the far future, a tale of detection or a full blooded saga set in a magical land where swords and spells are your only means of survival.

To solve the adventure you need to unravel a series of puzzles some of which you may not even recognize as puzzles. A really good adventure will almost literally transport you to this alternative 'world' and every move you make will have you totally involved.

Your palms sweat and the death of your character (it happens to the best of us) will be a keenly felt loss. But, the die has been cast you'll just have to go back and try to stay alive for longer next time!

Really good adventures of this type are not that common and it is difficult to define what makes them so anyway! Different people react to the same adventure in different ways. What is certain is that whilst searching for the adventure, there are many games well worth playing, give a great deal of pleasure and will hone your playing skills to a sharp enough standard for you to tackle 'the big one' when it turns up for you.

Ariadne's thread...

So, what do you do in this strange world in which you find yourself. Rule number one is: never get lost - often easier said than done. Not only do most adventures have mazes that are designed to get you lost but quite a few have 'one way' doors or routes that do not permit immediate return to the place that you just left.

Unlike Theseus, who was given a ball of thread to help him find his way out of the Minotaur's labyrinth you will have to make do with pencil and paper. Do not despise these humble tools, they are standard items in an adventurer's survival kit.

Use as large a piece of paper as is practical - at least A4 (the size of this magazine). The idea of 'mapping' is not only to note all possible routes, but also what you find along the way. For each location draw a box large enough to contain just a word or two that defines that location and leaves enough space beneath, to record objects found there (fig. 1).

At each location check for movement in every direction, get into the habit of trying to go North-West, South-East etc., as well as North, West, South and East. Remember it may also be possible to go Up or Down. Some adventures have messages like: 'obvious exits are west and south', although these might be the only exits - check out other directions to see if other paths exist...note the use of the word 'obvious'!

Load your adventure and get a clean piece of paper...you are ready to start. You will not know whether you are starting in the middle or at one side of the 'map', so draw the first box in the middle of the paper. Then you will have more paper if you are wrong.

Above all, be methodical and as neat as you can. Nothing is worse than coming back to an unfinished adventure and not being able to read your own notes. Most, but not all, have locations spread around in a fairly orderly grid pattern, such as shown in figure 1. There are exceptions, particularly in the case of mazes, but we will deal with those another time.

As the map grows, get into the habit of using the same symbols to indicate what you discover. Figure 1 shows how I record my finding. Lines between boxes show a pathway but the arrow-heads tell me in which direction I can travel. Most lines have opposing arrows showing that travel is allowed in both directions...but note there are some one-way paths.

A short line with a cross-bar indicates that movement is not permitted in that direction, a 'U' figure shows that movement in that direction will only bring me back to the same location. If travel is inhibited by a puzzle of some kind I make a cryptic note alongside the 'pathway'.

Plotting what happens with 'ups' and 'downs' may pose a slight problem, especially if the location reached is not part of the regular 'grid pattern'. The simplest way is to indicate movement to another 'map' (the circled letter 'A') and move to another part of your paper - such as the tree route from the old tree (fig. 1).

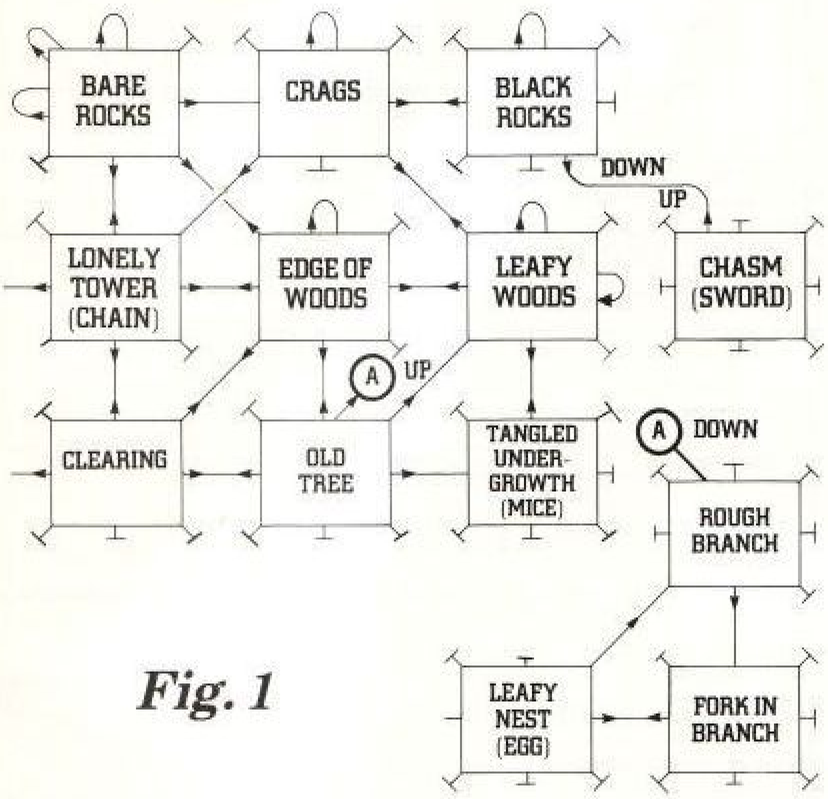


Fig. 1

Another rule.

Rule number two is: learn the language. No, not a foreign tongue, simply how this adventure interacts with you. Although some adventures have the ability to understand such commands as: 'PICK UP EVERYTHING EXCEPT THE RED BOOK AND RUN SOUTH TO THE THRONE' -most have a much more simple command interpreter.

You must 'suss out' what is understood. The better programs will understand several hundred words, but even then, there will be commands that you may think are perfectly straightforward but are not recognized. 'PICK UP THE KEY', may seem reasonable but you may find only 'GET' and 'TAKE' are acceptable - perhaps you may later be required to 'PICK THE LOCK', hence the ambiguity.

Instructions often give hints on how to give commands - it is up to you to find out the finer details. As we have been dealing with movement let us consider the more obvious commands. Most will recognize 'GO NORTH' but why waste time if you need only type 'N'. Sometimes you will need to 'enter' a hut, building etc. Do not give up if 'ENTER HUT' does not work, try 'IN' or 'GO' instead.

If where you want to go is above you, try 'CLIMB', 'SCALE' or even 'ASCEND' (you did try 'UP' didn't you). Usually this process of learning what the program wants you to enter is not too tedious and you will quickly have a pretty good idea of what is wanted. There is now a comparatively 'standard' set of adventure commands and only rarely do programmers wander away from the 'straight and narrow'.

A good game should not depend upon you trying to find a 'hidden' word, although having a Thesaurus handy can be an advantage. One thing I always do early on, is to see if words may be shortened to the first three or four letters - I'm lazy and its much quicker to type 'THRO SIMU' than 'THROW SIMULACRUM'. Enough of theory for this month let's look at a live one...

Multiple Levels.

Talk to adventure palyers and sooner or later you will get round to discussing the games from Level 9. They only produce adventure games and good ones at that. Starting some years ago with a very good implementation of the classic Colossal Caves (Colossal Adventure), they never really looked back.

Early games were text only...but what text. They read like a novel, with descriptions that made one wonder how they could cram so much into the computer's memory! As the demand for graphics grew, Level 9 were in there, with reasonable graphics (lots of screenfuls of them too) and still with plenty of descriptive text to go with them.

For Level 9, this did not mean that things stood still, they were looking for ways to improve not only the graphics but also their basic operating systems too. The latest result of this continuous 'brain bashing' is 'The Worm in Paradise'.

'The Worm' sets a standard that even Level 9 hope will last for some time. It boasts the facility to recognize a vocabulary of over 1000 words - no longer will you see a word in a description but have the computer decline to recognize its existence when you type in that same word.

The game also features multi-tasking (doing two things at once), so you can be typing in your next command whilst the pictures of your location are being 'drawn' to the screen. Those commands can be pretty complex too. An example given is 'EXAMINE ALL BUT THE HELMET, DUMMY AND LEOTARD AND GO EAST'.

This is the third in the 'Silicon Dream' series of adventures, the other two were 'Snowball' and Return to Eden' - there is no need to have played either of these two first. They are science fiction games set in the far future, each runs fairly logically on from the last - albeit 100 years have passed between 'Return' and 'Worm'.

The scene is set on Eden, an apparent paradise of a planet, where robots are commonplace, humans work only 15 hours a week, no taxes are paid and everything in the garden seems lovely...or is it? It is your task to find out what the real truth is...

Unlike many adventures where movement is highly restricted by a series of puzzles, here there is plenty to explore right from the start. Type in 'SCORE' regularly to see if your actions have made any difference, one presumes that a higher score means a move along the path to understanding and deliverance.

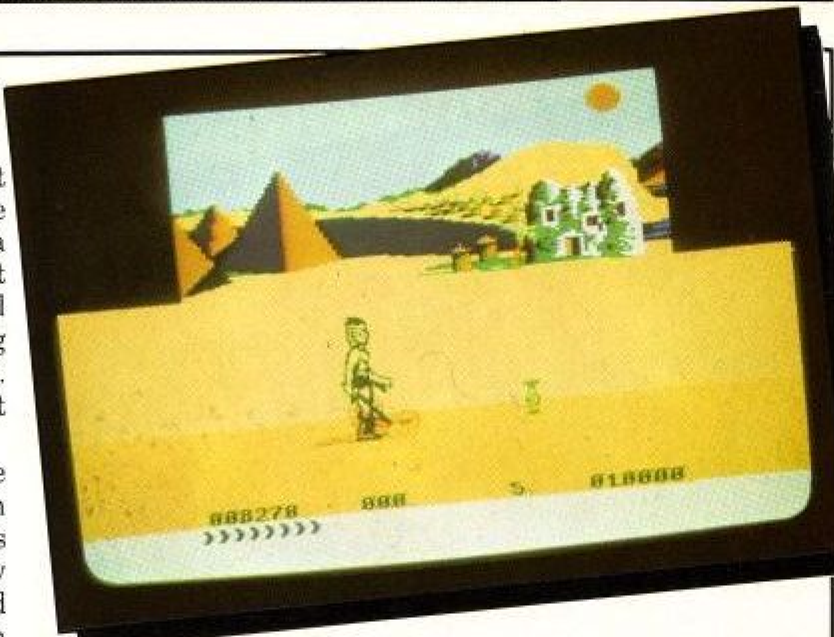
Level 9 have always had a name for marvellous zany humour 'The Worm' is no exception to this tradition. Tradition or not this game can very well be read on more than one level and I wonder if some very basic 'Level 9 philosophy' is being dispensed in a most palatable manner.

Although you may wander around at will, there are plenty of opportunities for you to 'do' things - as you would expect, some of these actions are not beneficial. The moral here, as always, is to 'SAVE' the game position fairly regularly.

If you have not already been given 'The Worm in Paradise' for Christmas, I would heartily recommend you get it as soon as possible - there is plenty in it for novice and expert alike.

ACU

FIGHTING WARRIOR



Ancient Egyptian swashbuckling is what this one is all about. A sort of 'Tutankamun meets Godzilla.' The screen goes all swirls like the start of 'Sorcery I' and dumps you in a spectrum-sized playing area with some very clever flash bits around to make it look bigger. What it does, for those who care, is to split the screen border colour several times to give you back, mid, and foreground colours while having the top half of the screen as a scrolling multi-colour background. The piccys in the back are quite good, but have absolutely no effect on the game whatsoever as the action never gets that far.

The really stunning bit in this game is the animation of the characters. These are wonderful and very realistic. Your Egyptian warrior is an animated masterpiece, two-tone but brilliant. His adversaries are just as good and come in several varieties, mostly based on Egyptian mythology but with one horrendous lizard creature in there. Mind you, the Egyptians had most creatures in their mythologies.

To rescue the (fairy tale?) princess in a temple, you have to hew your way through a host of these mythical monstrosities and watch them crumble to dust. You pass seven vases on the way which you can hack up as well. Some of these are good (giving you a shield or boosting your energy) and some are downright hostile (converting the next opponent into the godzilla clone).

When you get to the temple, every hack you make with your sword decreases your energy as well as the opponents. The trick is to cut him up outside the temple and then rush in. It always proved too much for me and the creatures leaped up and down with joy as I snuffed it.

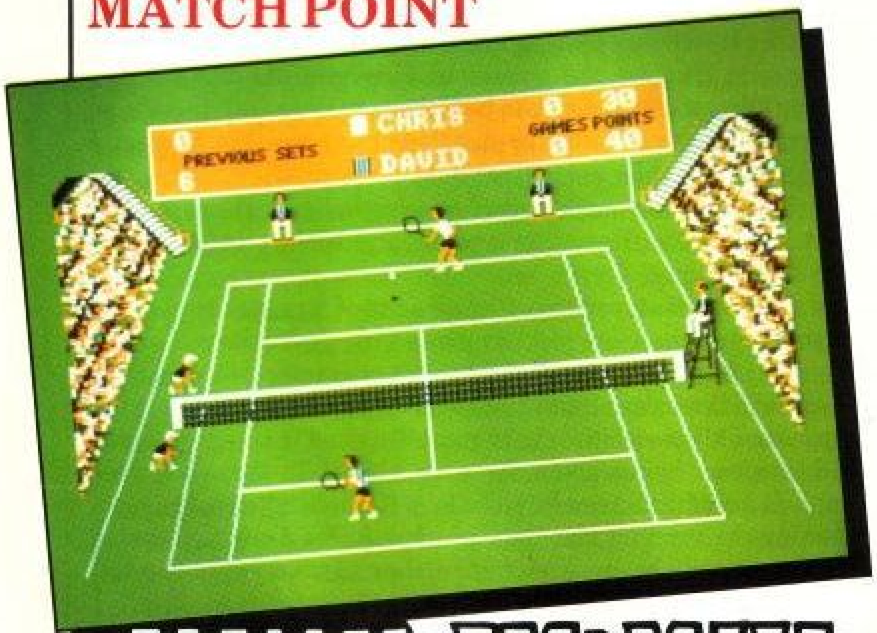
A nice game to keep the kid brother quiet when he comes round, but not enough excitement around to bring me back to it too often. They needn't have bothered with the speedloader/anti-664 device.

AUTHOR MELBOURNE HOUSE
PRICE £8·95

GRAPHICS	15	FIRST IMPRESSION	13
SOUND	8	LASTING IMPRESSION	13
POLISH	13	VALUE	12

COMMENT I want my mummy

MATCH POINT



AUTHOR PSION.
PRICE £8·95

GRAPHICS	16	FIRST IMPRESSION	15
SOUND	12	LASTING IMPRESSION	17
POLISH	18	VALUE	18

COMMENT The software racket

Smack, bonk, fifteen-love. Smack, bonk, thirty-love. Smack, bonk, forty-love. Smack, bonk, game to Becker. Have you ever wanted to play tennis with your computer (or football with your disc-drive)?

I have to report that Match Point has none of the features of professional tennis as we know it: No swearing, no disputed calls, no Prima Donna tennis stars, no big money deals, no love scandals, no Robinsons Barley-water. All you get is a game, in which you can take the part of one of the competitors playing against a computer opponent or an indulgent brother. If you are too feeble to play even computer tennis there is a demonstration mode; where the computer shows you how realistic a simulation it can be.

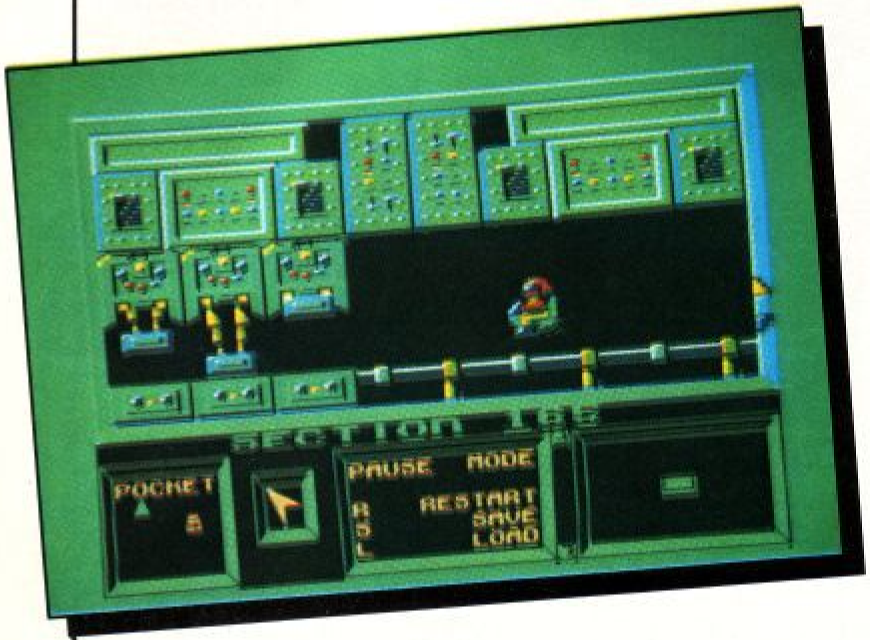
The whole of the court is displayed from the traditional TV camera angle. The score board is shown at the back with stands for the crowds around it. On the left sits the umpire and to the right are the ball boys. You get to serve first. Pushing the joystick (or keyboard if you don't have one) to the left and up and then pressing the fire button; will serve the ball into the far left-hand side of the court. Wallop! your computer foe sends it back with a deft flick of his pixel-powered wrist, it passes you on the other side of the court as you vainly attempt to get to it, cursing the unknown person who has glued your feet to the grass. The joystick moves the player around the court, but do not expect to reach every ball; unless you anticipate your opponents shot and move to a position where you can reach it.

Should a stray ball wang into the net, a ball boy will spring to life and retrieve it. This may happen after you have attempted a volley or tried to do a lob. Various shots can be produced by varying the timing of your fire-button triggered swipe.

Match Point seems to be a realistic and well programmed simulation of the game, tennis. If you are a regular computer games player you will enjoy Match Point for its quality. If you are the sort of person who only has one cassette; you will have to be a bit of tennis player to appreciate it.

Without practice, tennis is an almost unplayable game. This is a realistic simulation...

STRANGELOOP





AUTHOR VIRGIN

PRICE £8.95

GRAPHICS 18 FIRST IMPRESSION 17

SOUND 12 LASTING IMPRESSION 18

POLISH 17 VALUE 16

COMMENT WHAT THE "GANG OF FIVE" DID NEXT

Strangeloop is another "arcade adventure", in which puzzles have to be solved in real time while propelling your character around a large maze of scenery. It is not however, just another clone of the original Sorcery. This time, the layout of the playing area is known from square one. In fact the term "square" is very appropriate, as the whole thing is made up of a grid locations, 16 rooms by 16 rooms. This gives 256 different locations as opposed to the rather meagre 40 odd in Sorcery. The penalty for having so many rooms is felt in the lack of difference between each. The building blocks of each room are just as detailed, but are not so many and varied.

The whole game is set within the depths of an old and delapidated factory, where you have to get round and solve various strategic problems in order to guarantee a happy retirement. Initially you start on foot and have very limited control when it comes to crossing baths of boiling liquid and the like. However, a couple of rooms beneath you, you will find a room containing your jet-ski suspended from the ceiling. Your first task is to free it, before you can progress (anyone who fails to work out how to get it down might as well give up right now).

Finding your way about is greatly aided by the amount of information in the bottom third of the screen. Not only is there an arrow which always points towards the central control room (your ultimate goal), but even more useful is a small 5 by 5 map of the surrounding rooms showing the connecting doorways etc. This greatly helps in planning a route from one location to another. Colour coding of various rooms on this map helps to show rooms of particular significance (for example, the room with the jet-ski is pink).

You wouldn't expect the whole thing to be completely plain sailing, so to hinder your passage a large number of the rooms contain diagonally bouncing bits of coloured swarf. This can be shot, but is not erradicated unless every bit is hit. The story says that you are wearing an oxygen suit and each time you bump into a bit of swarf, another puncture develops. This is OK as long as your stock of patches does not fall to zero. But, as soon as it does, your slowly dwindling oxygen is lost at a progressively more alarming rate. As the number of patches being carried falls, the stock can be replenished if an object looking like a first aid box is picked up. The same is also true for the bullets in your gun. As the number remaining drops, a new pack can be picked up. With both these type of objects, it is not a good idea to pick them up unless they are really needed, otherwise their use will not be so effective.

Some rooms, contain much larger bouncing balls which are fatal on contact. There are various other types of large sprite all of which are best avoided.

As you travel about, you may find all sorts of strange objects, like everything else, these are picked up by passing over them. As each new one is picked up, a small descriptive character will appear in the section of the screen that shows what is in your pocket. Pushing the space bar allows a cursor to be moved around in this area, a one line description being given for each object. To take a simple example, a 5 credit coin can be picked up. If this is taken to the room containing the vending machine (which asks for 4 credits), then a one credit coin will be given as change (the exact motive for this has so far escaped me).

If you're one of those people who doesn't like to cheat when playing games then don't read the next paragraph.

An added bonus of the save game mechanism and perhaps an un-programmed feature is the ability to get past objects and walls that couldn't be passed otherwise. If you get to a screen that has a dividing wall down the middle and you would really like to get across to the other side, pause the game, hit 'S' to save then just before it does, hit ESC once. You will now be given the opportunity to re-position your man on the current screen in just the same way as if you had just lost one of your five lives.

While I don't see people going ape over the graphics in the same way as they did for Sorcery, the actual gameplay is actually better and closer approaches the complexities of a text adventure. However, if this game isn't as successful as Sorcery, then a lot of people will have missed out on a really excellent game.

CAULDRON

Double, double toil and trouble,
This beats turning rocks to rubble.
Cor! A semi-poetic review,
I should know, I've seen a few.
There's rhymes like this,
Written on the cover.
I saw them there,
So I wrote another.



It's all about witches you see, not the ones that hold meetings inside the wire at Stonehenge, or the mumbo-jumbo Dennis Wheatley types, but the old-fashioned Halloween sort; complete with the spikey hat, broomstick, warts, hooked hairy nose etc.

The idea is to collect the various ingredients for a really tasty stew (like the stuff called 'soup' in the vending machine): Juice of Toad, Wing of Bat, Hemlock Root -- Shakespeare might have been a great bard, but he was a lousy cook.

The spiel starts you off with an impressive, colourful piccy of a whole load of wonderfully tasteless bits failing to crawl, slither or otherwise escape out from a cauldron. This is being leant over and stirred by a witch who bears more than a passing resemblance to one of the dinner ladies at my old school .....

To get through the game you get ten old hags with a supply of magical energy. The energy can be replenished by flying through a sparkling point on the screen that is not entirely unlike the sparkling bits over the cauldron in 'Sorcery', if you see what I mean. This time though, you don't get 'orrible cauldrons that like sucking your precious energy out.

'What knocks down your precious energy then ?' I hear you ask (well, actually I don't, but you can ask ahead anyway if it makes you feel better). Many things I reply (and this is for real); flying about on the broomstick, throwing spells about, contact with various nasties and so on.



Nasties ? Oh yes, I almost forgot. As you fly through the various rocky and wooded landscapes or seascapes, things lurk below. They soon get it into their little heads (or fronds) that they are hungry and want a sandwich, but any old witch will do, including you. There then follows much casting of spells, cursing, swearing, snapping and gnashing of joysticks as you try to fight them off. Not easy doing this while dodging the trees, and frequently fatal to old hags.

Animated antagonists litter the aerial scenes, and I hope somebody cleans up after them. The creatures range from bats, to albatrosses (a Kensington seagull), airbourne venus flytraps and fireballs. O.K., So a fireball isn't a creature, but you get the idea.

Landing points, hags; for the use of, are strictly controlled. You can only come down on level bits of land, collide with the scenery and another one bites the dust (good name for a song is that) whilst doing cartwheels and assorted injuries. These landing things have to be regulated or hags would be coming in every witch way to land, wouldn't they?

Collecting a key will let you through a door (logical isn't it) and in to a sort of platforms and ladders job with many skull and crossbones, spooks and other unsavouries. Most of these are out to turn your witching hour into a brief witching thirty seconds. 'Tis unpleasant to be grabbed by the ghoulies.

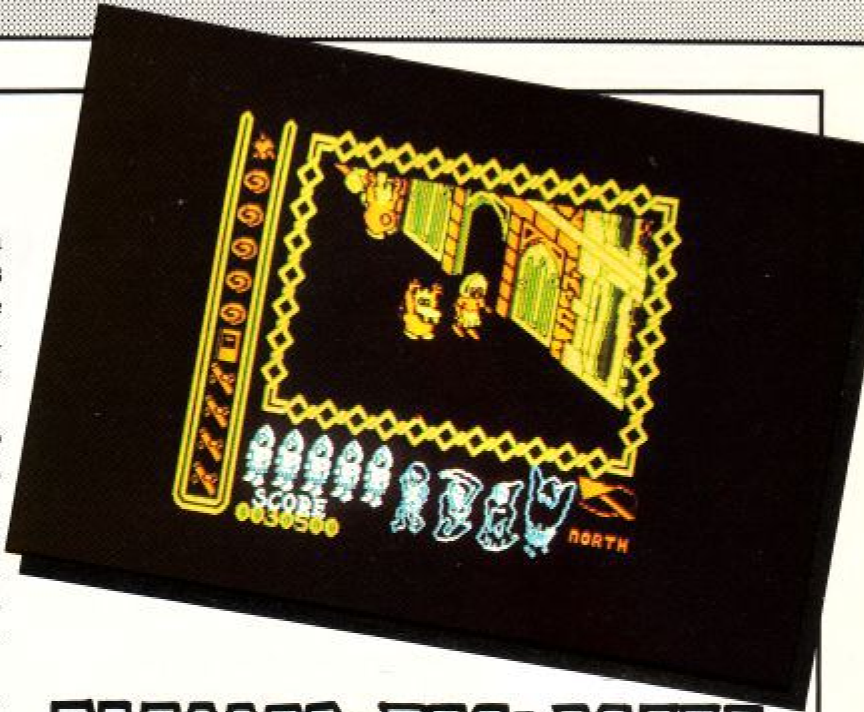
Hopping lightly from platform to platform with your trusty broom, you sweep through the maze to find the delicacies for the broth. Some platforms move. If they do and you don't, minced witch.

The sound ain't nothin' to write home about, and mostly consists of zaps and pings with the occasional squeaky floorboard noise thrown in as an attempt to sound like a cauldron being stirred.

The game uses ye olde xored graphics routines, the quickest, easiest, most foolproof and probably the messiest way of doing sprites that there is. Fortunately, you can get away with it if you have characters and backgrounds as lively as these. The overall effect is not far short of the old 'Sorcery'. I likes it.

AUTHOR PALACE SOFTWARE
PRICE £8.99
GRAPHICS 16 FIRST IMPRESSION 17
SOUND 12 LASTING IMPRESSION 18
POLISH 15 VALUE 17
COMMENT 'TIS SPELLBINDING

NIGHTSHADE



"Ultimate have done it again", is fast becoming a cliche, but an appropriate one for this game. Placed in a spooky town your task is to destroy four particularly nasty creatures. This is done with the aid of a collection of objects, a hammer, an hourglass, a cross and a Bible. Any of the objects will zap any of the spooks, but if you use the right one for each your score benefits.

A lesser peril is the collection of wierd and wonderful denziens who roam the town. These injure you on contact, touching three nasties will kill you. The effects of this poison can be cured with a potion. The foul creatures can be killed by shooting them with one of the four 'antibodies' which appear when you linger in certain rooms. Beware, some of the antibodies may not kill the foe, different characters respond to differênt treatment. It is advisable to learn which does what and to whom.

Initially Nightshade looks a lot like Alien8 and Knight Lore, it is viewed from the same 3D angle and has similar three colour graphics. The movement is the same rotate and walk or directional control and the game feels 'Ultimatey'. Nightshade is, however, a real improvement and a very different game. Instead of being a room by room, location game the action scrolls. As your character moves behind walls they vanish, so that you can still see yourself. There is nothing to jump onto and so timing and positioning is less critical. This is the first Ultimate 3D game where you get to shoot things. The skills involved become mapping and pattern matching.

To a lesser extent than other Ultimate programs, once you have cracked it there is not much incentive to play again, but it is the playing, mapping and living the game which makes Nightshade. Sheer programming brilliance helps but it is that undefinable something which draws me to this game.

AUTHOR ULTIMATE
PRICE £9.95
GRAPHICS 19 FIRST IMPRESSION 14
SOUND 12 LASTING IMPRESSION 17
POLISH 19 VALUE 17
COMMENT STATE OF THE ART PROGRAMMING

DON'T PANIC



I'm feeling very depressed. There was this game called Don't Panic so I thought; Wow! a game about how to get heavily into interstellar travel on less than 15 Altarian Dollars a day, drinking Pan Galactic Gargle Blasters and generally having a great time.
Silly Me!

What the game actually is, is one of your bog standard, everyday platforms-and-ladders 'Shoot Em Up' games and not a very inventive one at that.

The real aim of the game is to guide a Droid around a very contaminated multi-level loading bay (The Platforms) armed with only a decontamination laser, running up and down lift shafts (Ladders) and shooting little Teddy Bears whom are contaminated with a deadly toxin (probably derrived from the dregs of the programmers coffee mugs). Once you have decontaminated (shot) these poor little Teds they get severe anaemia and turn white. You then add insult to injury by shoving them off the end of the platform into a waiting rocket ship which, when it has consumed enough Bears, converts them to rocket fuel and raises the ship a level.

Fortunately, all is not bad for the Teddy Bears and protection comes in the form of mutant toads which you can also shove off the end of the platform (at least thats what the leaflet says) and a one legged hopping mutant thingy, which you can't. (Maybe it is the Ravenous Bug Blatter Beast of Traal come to say 'Hi!'). This beast quite rightfully eats you (you being biodegradable when smothered in ketchup) and stops you in your evil task. This it tends to do with great ease and the beast is, in my experience, totally undodgeable. This brings the game to a premature and fairly regular end.

There is one good thing about this game however. The price. This game is part of Telecom's el cheapo range and retails at half the price of most other games. (They make up for this loss on my 'phone bill - Ed). In my opinion you get roughly what you pay for. ACU

AUTHOR FIREBIRD
PRICE £3.95
GRAPHICS 12 FIRST IMPRESSION 8
SOUND 10 LASTING IMPRESSION 8
POLISH 12 VALUE 15
COMMENT YOU PAYS YOUR MONEY YOU TAKES YOUR CHOICE

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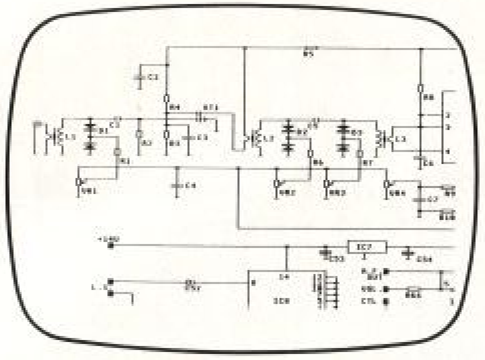
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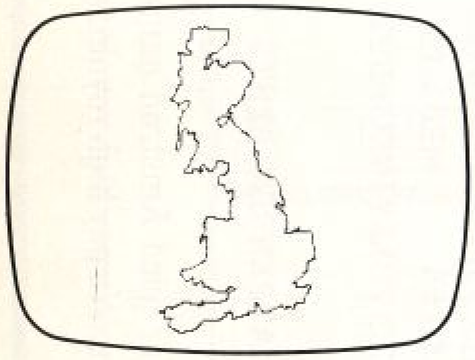
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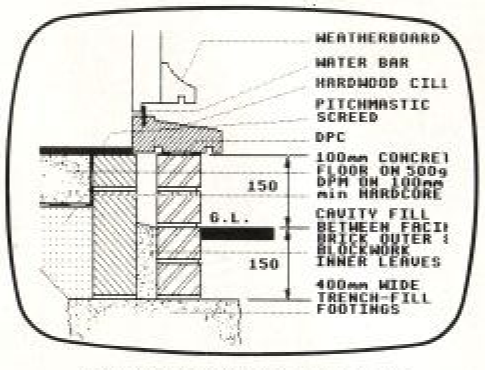
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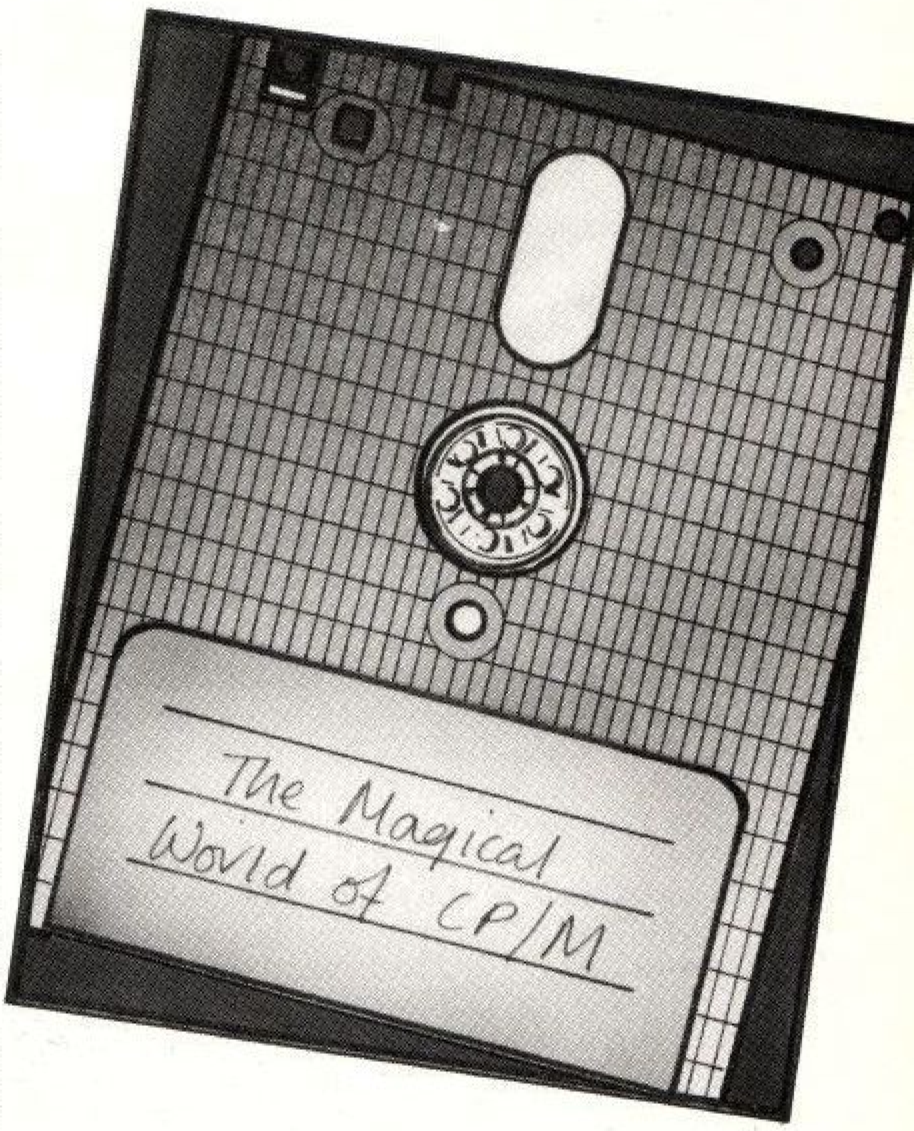
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AMU3

Looking At CP/M : Batch files

by Simon Craven



With any personal computer you have an interactive system: you type something, and the computer responds. But in the good old days when CP/M was first thought of, it was by no means a foregone conclusion that users and their computers would work together in a real-time relationship.

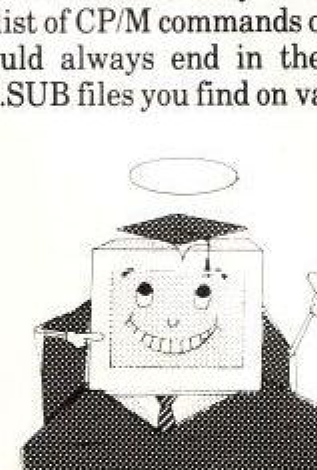
As a rule, computers were not something that users - or even programmers - actually got their hands on, face to face. In fact, it was rare for either of these categories of mere mortals to be allowed into the hallowed presence of The Computer itself. Normally their requests (not instructions) were made through a hierarchy of operators. When you had handed in your program on a set of punched cards you had to wait hours or even days to get the result.

User programs and information requests were stacked up in trays and then run sequentially; a method known as batch processing. The way we micro users now do things is real time processing.

Sometimes, however, real-time processing can get a bit too much like hard work. Your Amstrad running CP/M can only do one thing at a time, so if you want to do lots of boring little tasks in CP/M you have to spend a lot of time sitting in front of the computer waiting for it finish one task before typing in a new command. If this sequence of commands is something you have to go through regularly, you will soon wish there was some way of storing up the keystrokes and getting them fed into the computer automatically while you read the paper.

Fortunately there is just such a tool at your disposal... the batch file, sometimes known as a SUBMIT file. This is quite definitely the easiest way of programming a CP/M machine to do anything, and can save you hours of tedious typing in the long run.

A SUBMIT file is essentially a simple ASCII text file containing a list of CP/M commands or program names. The filename should always end in the extender .SUB . To examine any .SUB files you find on various discs supplied to



you (this is always a good idea, as you never know what people put on discs), you can TYPE it just like any other text file, or use PIP.COM to copy it to LST: , the printer. This practice of examining .SUB files before running them is especially important if they originate from some relatively insecure source such as a computerised bulletin board or a user group. That way, you'll learn new techniques, but more importantly you'll spot any potentially embarrassing commands, like ERA *.* before they do their worst.

Running a .SUB file is simple: ensure that you have a disc with SUBMIT.COM logged on to the system and type SUBMIT EXAMPLE.SUB or if you feel lazy, just SUBMIT EXAMPLE. However, it is not immediately obvious how you create one in the first place. With a suitable text editor (and that means one designed for programmers, not writers) obviously you can use that. But most non-programmers don't have such things. Let's say you are an 8256 user who is fortunate to have a copy of Wordstar in the correct format.

(Lococscript fans can stop complaining- there are things Locoscript handles better than Wordstar, but for long documents, say 50K plus, Wordstar is streets ahead).

The most efficient way of using Joyce's imaginary ramdisc, M:, and the single 'real' disc drive is to boot CP/M in the usual way, put the necessary Wordstar files into the ramdisc, and insert an empty disc in the A: drive to store the text on. That way, all the Wordstar overlays and any utility programs you have will work instantly, and in the event of a power failure your text up to the last point you saved it will still be safe.

Creating a text file without an editor program is easy enough: you just have to be careful with your typing. You decide to call it RWS.SUB (for Run Wordstar). Stick a system disc in the drive, type PIP RWS.SUB fi CON: and hit RETURN. The cursor moves down a line but the prompt does not reappear. You have told CP/M that a file called RWS.SUB is about to be copied from the keyboard to the logged drive, and it is waiting for your input. All you do now is enter the commands required. The comments on the right are for explanation only- don't type them in.

PIP M:=A:WS.COM	the main Wordstar program
PIP M:=A:WSOVLY1.OVR	an overlay program file
PIP M:=A:WSMSGSS.OVR	the text for Wordstar messages
PIP M:=A:COUNT.COM	a typical word counter program
M:	change the logged drive to M:
WS A:WORKFILE.TXT	start Wordstar, opening a file on A:
COUNT A:WORKFILE.TXT	after exiting WS.COM, count the number of words typed.
↑Z	end of file character

The final control-Z [RETURN] is the CP/M end-of-file marker and when this is sent the disc will grind into action and the file will be created. Copy it on a disc with the Wordstar files and SUBMIT.COM and you are ready for action.

If you are a Wordstar user, you can use it to create and edit batch files like this. but make sure that you use the non-document mode. Unfortunately, one text editor you can't use is Locoscript, because of its inability to produce completely naked ASCII files, without fancy formatting codes inserted by the program itself, and because of the strange disk format it uses, making it incompatible with CP/M.

Each line of a .SUB file is restricted to a length of 128 characters, but this is unlikely to cause any hardship. If you SUBMIT a file which includes 'impossible' commands, such as copying a file which is not present, it will give the usual CP/M error message appropriate to the condition, and carry on regardless with the next instruction.

More advanced uses for batch files come with a technique called parameter substitution. If you have to specify the individual filenames for a given operation within the .SUB file, the technique is obviously limited. It might well be that you don't want to have your Wordstar text file automatically called WORKFILE.TXT - in fact, it would be positively inconvenient. So instead of specifying that particular filename in your batch program, you could replace it with $1., giving you:

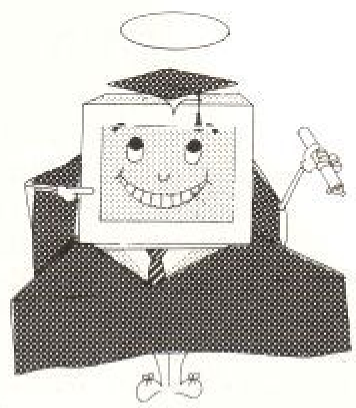
WS A:$1.TXT	start Wordstar, opening a file on A:
COUNT A:$1.TXT	after exiting WS.COM, count the number of words typed.

in the appropriate lines of the batch file.

The string $1 acts a bit like a wildcard. To fill in the missing filename, represented by $1, you supply it as part of the command line which executes the batch file, like this:

SUBMIT RWS MYWORDS

The text file opened will be MYWORDS.TXT. If your batch file calls for operations to be carried out on more than one file, you can use parameter substitution to cater for up to nine dummy files, represented by $1 to $9. The filenames you want to assign are tacked on to the command line in order:



SUBMIT RWS FILE1 FILE2 FILE3 FILE4... etc

One way in which CP/M Plus is superior to CP/M 2.2 is its PROFILE.SUB feature. PROFILE.SUB is a special batch file for which CP/M Plus always searches on the logged drive every time the system is booted. If a PROFILE.SUB file is found, it is executed automatically, and if it is not present the operating system just goes into the normal A> prompt.

This handy bit of automation can take even more legwork out of using CP/M. If you rename RWS.SUB as PROFILE.SUB, and you ensure that it is on a disk which includes the operating system tracks, it will run without any effort at all on the part of the user. If you subsequently want to run the same batch file again, you don't have to reboot- it can be run using SUBMIT in the normal way.

If you start finding uses for batch files, it will not take long for you to get completly frustrated by the quick & dirty way of creating them suggested above. It's fine for short files, but the inability to edit mistakes in a line once you have pressed RETURN on it makes it a hit and miss affair at best.

The good news is that every CP/M user has at his disposal an editing program with a wide range of functions, called ED.COM. The bad news is that ED shows CP/M at its worst. It is extremely difficult to learn and takes a lot of keystrokes to do almost anything. This is because ED is not a screen editor, where you move the cursor around a screen full of text and change things at will. It was designed in the days when you used a computer via a teletype machine, not a video terminal, and consequently you can only work on one line at a time.

Having said that, ED is a powerful tool for writing program source code once it has been learnt. However, not even its greatest fan would try to use it to write even a simple piece of text, such as a quick memo or a long caption for a photograph. I will return to the subject next month.

ACU

More than a w
for less than

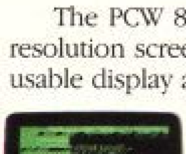


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a typewriter.



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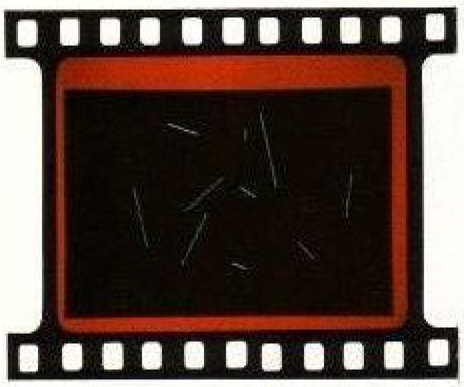
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A·N·I·M·A·T·O·R

If you think lines are what you get for talking in class then you are missing out on half the fun of computer graphics. Chris Wood leads his lines a merry dance.

You must have all seen the Channel 4 logo swinging into place accompanied by the sound of the most expensive four notes ever composed. Well you can't quite do animation of that sort on your Arnold, but the following program will give you a taste of what can be done, and next month I will



give you a larger and more sophisticated version complete with a frame editor for you to devise your own animations.

What this program is is effectively an inbetweener. It exploits a method which is used in computer animation. You define a starting picture, composed of a number of lines, and an end picture composed of the same number of lines, tell it how many steps to take, and it will smoothly turn the first picture into the second. This is done by dividing the difference between the starting and finishing positions of each point by the number of steps to see how much it must move each time to get from the first to the last.

x starting coord=100, finishing coord=150
number of steps=10:(150-100)/10=5 pixels each step.

You could have an animation where the letters of your first name could turn into the letters in your surname, with any 'extra' lines that might need to be lost or found (depending on whether your first or last name has the most letters) could turn into double lines and hide, or shrink into a full stop, or the dot on an 'i' could expand into a letter or letters. Things can appear to shrink or grow; you define the first frame as normal, and the second as a small dot, or vice versa; they can move across the screen, by repeating a picture but in a different place on the screen. You could even have a wire-frame man walking across the screen, if you fill in the key frames. Most of that will happen next month, but this program will give you an idea of what you can do.

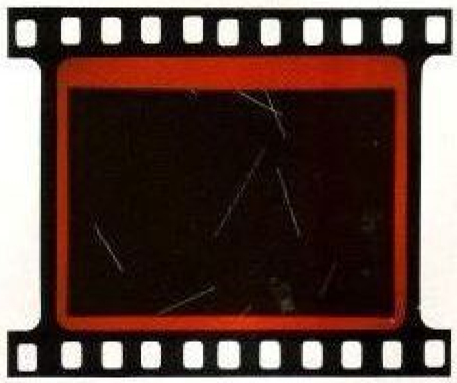
What happens when you run it is that a



number of lines placed around and off the screen, fly together at different speeds and spin into place to form the letters 'ACU'. This is the simplest demonstration I could think of that would not need you to type in a lot of data. What the routine does is actually play back an explosion of the letters into their lines, but in reverse, so they appear to come together. What I did was to design the three letters, put the data into the program, and also give the ends of each line a velocity in the x and y directions. This is like working out the distance between the first and last frames, but in reverse. I give the end of the lines a random step to move in and it turns into a random second frame after a set number of steps. I decided to leave it for twenty-one steps, noted down the new coordinates of the ends of the lines, reversed all the velocities of the ends of the lines, and hey presto, they all swing back into place.

To see the programs in action, type in and run the largest program. If you make any mistakes you will be told which lines in the data you need to correct. When you have saved a final copy of the program type in and run the smallest program to see the animation.

You can try defining your own shapes and using the program to explode or implode them if you want to, or you may just like to watch it, and wait for the new program and editor next month. If you do want to use it, there are ten lines, and the data for them starts at 20127. The first two bytes are the x coord of one end of the line, the next two are for the y coord, the next two bytes are for the x coord or the other end of the line, and the following two for the y coord. The next eight are four pairs of bytes stored in the same way for the amount to be added, or subtracted from the coordinates each time



round the program. Therefore each line takes up sixteen bytes. Next months program will compress this, and data for different pens, and the floating point for those awkward numbers, all into six bytes, which means you will have lots of room for quite complicated animations.

If you know anything about machine code you may be wondering, how I am going to implement floating point in machine code. The simple answer is that I am not. Well not properly. I am going to cheat and use half a byte to store a sort of decimal point for the bits of pixels that get left over. I will explain properly next month.

```
10 'Program 1
20 'Imploding 'ACU' logo routine.
30 'By Chris Wood for ACU. 19/11/85.
40 '
50 MEMORY 19999:h=20000
60 lin=1000:add=h:FOR t=1 TO 290 STEP 8
70 chk=0:FOR b=0 TO 7
80 READ a$:a$=UPPER$(a$):n=1
90 IF LEN(a$)<>2 THEN GOTO 220
100 b$=MID$(a$,n,1)
110 GOSUB 200:IF a=0 THEN GOTO 220
120 n=n+1:IF n=2 THEN GOTO 110
130 p=VAL("&"+a$):POKE add,p
140 add=add+1:chk=chk+p
150 NEXT b: READ a
160 IF a<>chk THEN GOTO 220
170 PRINT "Line";lin;"OK":lin=lin+10
180 NEXT t:FOR z=0 TO 159
190 POKE 22000+z,PEEK(20127+z):NEXT:END
200 a=INSTR("0123456789ABCDEF",b$)
210 RETURN
220 PRINT"ERROR in line";lin:END
1000 DATA DD,21,9F,4E,06,0A,C5,DD, 925
1010 DATA 22,89,4E,CD,3B,4E,DD,2A, 854
1020 DATA 89,4E,01,10,00,DD,09,C1, 655
1030 DATA 10,EC,C9,AF,CD,DE,BB,CD, 1447
1040 DATA 68,4E,CD,EA,BB,CD,68,4E, 1195
1050 DATA CD,F6,BB,DD,2A,89,4E,CD, 1321
1060 DATA 7A,4E,3E,01,CD,DE,BB,DD, 1098
1070 DATA 2A,89,4E,CD,68,4E,CD,EA, 1083
1080 DATA BB,CD,68,4E,CD,F6,BB,C9, 1413
1090 DATA DD,5E,00,DD,56,01,DD,6E, 954
1100 DATA 02,DD,66,03,01,04,00,DD, 554
1110 DATA 09,C9,06,04,C5,CD,8B,4E, 839
1120 DATA 01,02,00,DD,09,C1,10,F4, 686
1130 DATA C9,00,00,DD,5E,00,DD,56, 823
1140 DATA 01,DD,6E,08,DD,66,09,19, 697
1150 DATA DD,75,00,DD,74,01,C9,5F, 972
1160 DATA 00,48,00,20,00,96,00,05, 259
1170 DATA 00,04,00,08,00,06,00,DD, 239
1180 DATA 00,BC,01,FB,00,92,01,FF, 842
1190 DATA FF,F8,FF,01,00,FA,FF,25, 1301
1200 DATA 01,18,00,A7,00,F4,FF,FF, 946
1210 DATA FF,0C,00,05,00,08,00,31, 329
1220 DATA 01,88,00,8E,01,30,01,FB, 580
1230 DATA FF,04,00,FA,FF,FC,FF,D8, 1487
1240 DATA 01,81,00,99,01,44,01,F8, 601
1250 DATA FF,07,00,FB,FF,F8,FF,6F, 1382
1260 DATA 01,09,00,4E,01,F4,FF,FD, 841
1270 DATA FF,07,00,02,00,08,00,AE, 446
1280 DATA 01,68,01,4E,01,92,01,FA, 582
1290 DATA FF,FC,FF,02,00,FA,FF,6E, 1379
1300 DATA 01,D1,01,AD,01,44,01,02, 456
1310 DATA 00,F7,FF,FF,FF,F8,FF,16, 1537
1320 DATA 02,5D,00,F5,01,1E,00,FA, 621
1330 DATA FF,03,00,FF,FF,06,00,88, 910
1340 DATA 02,C6,00,9D,02,D5,00,F8, 820
1350 DATA FF,FE,FF,F7,FF,03,00,11, 1286
1360 DATA 9F,4E,21,F0,55,01,A0,00, 756
```

```
10 'Program 2.
20 MODE 1:INK 0,0:INK 1,20:BORDER 6
30 FOR n=0 TO 20:CALL 20000:NEXT
40 FOR z=0 TO 159:POKE 20127+z,PEEK(2200
   0+z)
50 NEXT:GOTO 20
```

ACU

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Galaxian Revenge

By K N Khalique

The deadly invaders are once again threatening Earth. Beaten off the first time, they have regrouped their modified ships into the familiar attack formation. Only by blasting them out of the sky, as they swoop toward you, can you save the world from destruction.

This colourful sprite game will keep you and the kids amused for hours. To get it running; type in listing 1 which is the Basic part of the program. Save this onto a blank tape. Don't rewind the tape after it has saved. Type in listing 2 which is the machine code file creating program. When this runs without errors it will save a machine code file onto the tape after the Basic program on the tape. It is probably a good idea to save the machine code creator as well, on a seperate tape. If you have made a mistake typing in the numbers you will be told which line to correct. If you have made a major mistake in the data you will get a Type Mismatch Error. To find out where the error is type "PRINT LN", the number which appears on the screen is the approximate linenumber for the error.

Once you have got the game working, the controls are Z to move left, X to move right and SHIFT to fire the laser.

Listing 1

```
10 REM      ***Galaxian Revenge***
20 REM                BY
30 REM            K.N.Khaleque
40 REM    For Amstrad Computer User
50 DIM HS(10),HS$(10)
60 FOR l=1 TO 10
70 READ a,a$
80 hs(l)=a:hs$(l)=a$
90 NEXT l
100 DATA 3000,"Khaleque",260,"Amstrad",2
    50,"QL",240,"BBC",200,"Lynx",190,"Sp
    ectrum",170,"ZX-81",100,"ZX-80",100,
    "?????",100,"?????"
110 SPEED WRITE 1
120 IF HIMEM<>&4000 THEN GOSUB 410
130 GOSUB 700
140 dif%=120:POKE &4FD5,3:sc%=1:ZONE 9
150 FOR f=&4F00 TO &4F08:POKE f,0:NEXT f
160 '               ***Main Prog***
170 '
180 '
190 MODE 1:INK 2,26,0:PEN 2
200 POKE &4980,Sc%
210 LOCATE 15,8:PRINT "Please wait"
220 PEN 3:GOSUB 470
230 CLS
240 INK 2,20
250 MODE 0
260 FOR t=1 TO 25:PLOT INT(RND*30),INT(R
    ND*400),4:PLOT INT(RND*640),INT(RND*
    40):PLOT INT(RND*640),INT(RND*40)+36
    0:PLOT INT(RND*30)+610,INT(RND*400):
    NEXT t
270 CALL &5005
280 IF PEEK(&4FD6)=2 THEN SOUND 129,100,
    -8,15,1,0,1:GOSUB 600:sc%=sc%+1:GOTO
    190
290 PEN 1
300 LOCATE 1,10:PRINT " You are dead pre
    ss  a key to continue!"
310 FOR t=100 TO 0 STEP -1:i$=INKEY$:INK
    0,INT(RND*26)+1:SOUND 1,t,1,15:NEXT
    t
320 INK 0,3,6
330 i$=INKEY$:IF i$="" THEN GOTO 330
340 INK 0,0
350 MODE 1
360 GOSUB 1020
370 INK 2,20
380 IF t=100 THEN GOTO 140
390 IF t=200 THEN GOTO 130
400 END
410 CALL &BC02:MODE 1:BORDER 0:INK 0,0:I
    NK 1,26:PAPER 0:PEN 1
420 LOCATE 10,12:PRINT "Loading Second S
    ECTION"
430 MEMORY &4000
440 LOAD "!galax.2",&5000
450 RETURN
460 END
470 PEN 1:LOCATE 1,13:PRINT " While you
    are being transported to:-";:PEN 3:L
    OCATE 15,19:PRINT "Quadrant";sc%;"."
    :PEN 3
480 LOCATE 1,1:PRINT "Time:";
490 MOVE 96,390:DRAW 351,390,1
500 PLOT 0,0,0
510 FOR f=0 TO 255
520 POKE &5900+f,INT(RND*dif%)
530 POKE &5F00+f,INT(RND*(13+(dif%/3)))
540 POKE &5A00+f,INT(RND*2)+3
550 POKE &5B00+f,INT(RND*&7E)+10
560 POKE &5C00+f,(INT(RND*4)*16)+&88
570 PLOT 351-f,390
580 NEXT f
590 RETURN
600 dif%=dif%-6
610 IF dif%<5 THEN dif%=5
620 IF sc% MOD 4<>0 THEN RETURN
630 a=PEEK(&4FD5)
640 IF a>=8 THEN RETURN
650 a=a+1:POKE &4FD5,a
660 RETURN
670 '               ***Intro***
680 '
690 '
700 CALL &BC02:MODE 1:INK 0,0:BORDER 0:P
    EN 1:PAPER 0
710 PRINT CHR$(22)+CHR$(1):PEN 2:LOCATE
    12,2:PRINT "_______________":PEN 1
720 LOCATE 12,2:PRINT "Galaxian Revenge"
    +CHR$(22)+CHR$(0)
730 WINDOW 1,40,4,25
740 RESTORE 860
750 FOR n=1 TO 25 STEP 2
760 IF n>21 THEN LOCATE 1,22:PRINT:PRINT
    :PRINT:l=21 ELSE l=n
770 PEN INT(RND*3)+1
780 READ a$
790 FOR f=40 TO 20-(LEN(a$)/2) STEP -1
800 IF f+LEN(a$)>40 THEN b$=LEFT$(a$,40-
    f) ELSE b$=a$
810 LOCATE f,l:PRINT b$;" ";
820 SOUND 2,f,1,15
830 NEXT f
840 NEXT n
850 WINDOW 1,40,1,25
860 DATA "BY"
870 DATA "K.N.Khaleque"
880 DATA "This is a shoot'em up game."
890 DATA "Try and destroy the aliens,"
900 DATA "with your laser base."
910 DATA "But watch out!"
920 DATA "The aliens drop bombs"
930 DATA "and can swoop down at you."
940 DATA "Keys:Z-left:X-right:Shift-fire
    "
950 DATA "GOOD LUCK!"
960 DATA "You have three lives to start
    with"
970 DATA "and you gain one every 4 quadr
    ants."
980 DATA "Press any key to begin."
990 FOR pa=1 TO 100:i$=INKEY$:NEXT pa
1000 i$=INKEY$:IF i$="" THEN GOTO 1000
1010 RETURN
1020 '              ***Hall of fame***
1030 '
1040 '
1050 sc$=""
1060 FOR l=0 TO 6
1070 sc$=sc$+STR$(PEEK(&4F00+l))
1080 NEXT l
1090 sco%=VAL(sc$)
1100 IF sco%>hs(10) THEN GOSUB 1390
1110 LOCATE 1,25:PRINT ""
```

```
1120 PEN 1:PRINT SPC(13);"*HALL OF FAME*
     "
1130 PRINT SPC(13);"--------------"
1140 PRINT
1150 INK 2,20,11
1160 FOR l=1 TO 10
1170 IF hs$(l)=n$ THEN PEN 2:GOTO 1190
1180 PEN 1
1190 PRINT SPC(4);hs(l);:PEN 1:PRINT " "
     ,"BY"," ";:PEN 3:PRINT hs$(l)
1200 NEXT l
1210 FOR l=1 TO 8
1220 PRINT
1230 NEXT l
1240 PRINT:PEN 1
1250 SOUND 1,100,-8,15,1
1260 RESTORE 1380:READ a$
1270 t=0
1280 PEN 2
1290 FOR f=1 TO LEN(a$)
1300 b$=MID$(a$,f,39)
1310 IF LEN(b$)<39 THEN b$=MID$(a$,f,39)
     +LEFT$(a$,l):t=t+1
1320 LOCATE 1,19:PRINT b$;
1330 IF INKEY(60)=0 THEN f=LEN(a$):t=100
1340 IF INKEY(35)=0 THEN f=LEN(a$):t=200
1350 NEXT f
1360 IF t>99 THEN RETURN
1370 GOTO 1260
1380 DATA "Press 'S' to re-start game or
     'I' for instructions. "
1390 PEN 2:PRINT
1400 INPUT "Enter your name(max 8 letter
     s):";n$
1410 IF LEN(n$)>8 THEN MODE 1:GOTO 1390
1420 FOR l=1 TO 10
1430 IF sco%>hs(l) THEN GOSUB 1460:l=10
1440 NEXT l
1450 RETURN
1460 FOR o=10 TO l STEP -1
1470 hs(o)=hs(o-1):hs$(o)=hs$(o-1)
1480 NEXT o
1490 hs$(l)=n$:hs(l)=sco%
1500 RETURN
```



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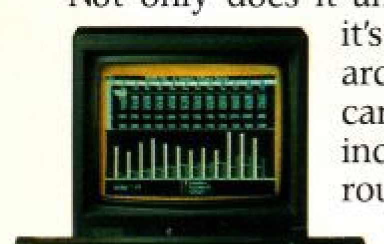


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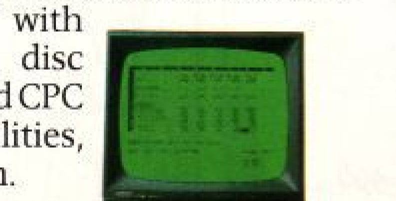


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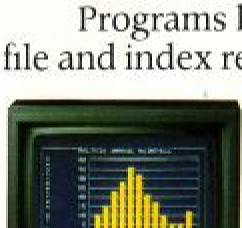


On the business side we start you off with a free disc which introduces you to the Amstrad CPC 6128's impressive range of capabilities, and the best ways to exploit them.



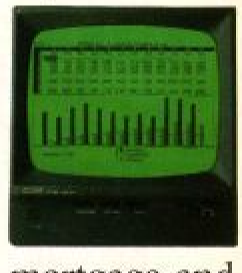
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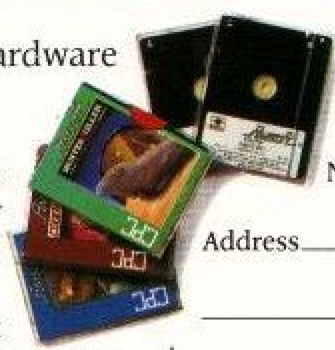
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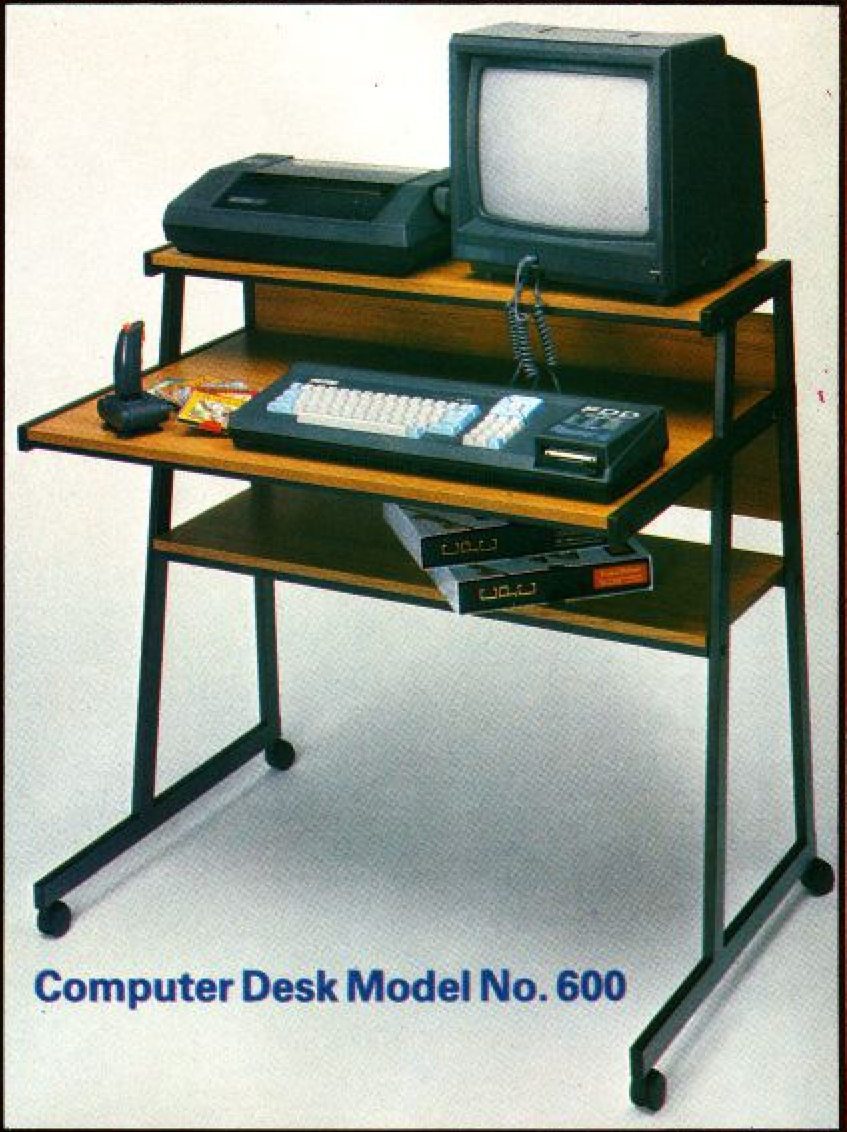
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Listing 2

```
10 MEMORY &7FFF:ln=1000
15 PRINT"Please Wait"
30 FOR col=0 TO 7:READ a$
40 IF a$="**" THEN 120
50 v=VAL("&"+A$)
60 z(col)=z(col)+v
70 chk=chk+v
80 POKE &8000+n,v:n=n+1:NEXT
90 READ A:Z(8)=z(8)+a
95 ln=ln+10:PRINT"*";
100 IF chk<>a THEN PRINT"Error in line "
    ;ln:STOP
110 chk=0:GOTO 30
120 FOR col=0 TO 8:READ chknum:IF chknum
    <>z(col) THEN PRINT"Error in column
    data" ELSE NEXT
130 PRINT"ALL OK"
140 SAVE"galex.2",b,&8000,&1600
150 END
1000 DATA 3E,00,CD,0E,BC,CD,70,53, 869
1010 DATA 3E,00,32,F5,51,32,F7,51, 816
1020 DATA 32,F4,51,32,F9,51,21,00, 788
1030 DATA 59,22,F0,4F,21,00,5A,22, 599
1040 DATA F2,4F,21,00,5B,22,F4,4F, 802
1050 DATA 21,00,5C,22,F6,4F,21,00, 517
1060 DATA 5F,22,FA,4F,3E,00,32,D0, 778
1070 DATA 4F,32,06,4F,00,00,00,00, 422
1080 DATA 00,CD,F8,50,CD,00,51,C9, 1020
1090 DATA 21,18,C0,01,40,65,CD,00, 631
1100 DATA 58,3E,02,32,0E,58,CD,F0, 749
1110 DATA 50,3A,80,49,21,CB,C7,FE, 1028
1120 DATA 00,CA,75,50,FE,26,F2,75, 1050
1130 DATA 50,E5,F5,01,20,64,CD,08, 903
1140 DATA 58,F1,C3,50,58,11,00,4F, 788
1150 DATA 3E,07,21,21,C0,F5,E5,1A, 827
1160 DATA 01,10,00,21,80,65,FE,00, 531
1170 DATA CA,90,50,3D,09,C3,86,50, 905
1180 DATA 44,4D,E1,E5,D5,CD,00,58, 1116
1190 DATA D1,E1,01,03,00,09,F1,13, 707
1200 DATA 3D,C2,7D,50,3E,08,32,0E, 594
1210 DATA 58,3E,F8,32,1F,58,C9,00, 768
1220 DATA 00,00,00,00,00,00,00,00, 0
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1290 DATA 00,00,00,00,00,00,00,00, 686
1300 DATA 3E,FE,32,1F,58,C9,00,00, 623
1310 DATA 3E,00,32,20,4F,C3,70,5D, 995
1320 DATA 3E,42,CD,1E,BB,C0,CD,30, 832
1330 DATA 51,CD,00,54,CD,70,57,3A, 1096
1340 DATA D6,4F,FE,00,C0,3A,DC,4F, 887
1350 DATA 3C,32,DC,4F,FE,1E,C2,00, 443
1360 DATA 51,C3,50,57,00,00,00,00, 0
1370 DATA 00,00,00,00,00,00,00,00, 1015
1380 DATA ED,5B,F0,51,2A,F2,51,01, 883
1390 DATA 80,60,CD,00,58,CD,50,51, 1015
1400 DATA ED,5B,F0,51,2A,F2,51,01,
1410 DATA 00,60,CD,00,58,C9,00,00, 590
1420 DATA 3E,47,CD,1E,BB,CA,68,51, 942
1430 DATA C3,80,51,2A,F0,51,2B,2B, 853
1440 DATA 22,F0,51,C3,A0,51,00,00, 791
1450 DATA 3E,3F,CD,1E,BB,CA,A0,51, 990
1460 DATA C3,90,51,2A,F0,51,23,23, 853
1470 DATA 22,F0,51,C3,A0,51,00,00, 791
1480 DATA 3A,F0,51,FE,06,CA,68,51, 1026
1490 DATA C3,5B,51,00,00,00,00,00, 367
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1520 DATA 3A,F4,51,FE,01,CA,AE,51, 1095
1530 DATA C3,50,52,00,00,00,ED,5B, 685
1540 DATA F5,51,2A,F7,51,01,80,60, 921
1550 DATA E5,CD,00,58,E1,23,23,23, 852
1560 DATA 23,23,23,22,F7,51,3A,F9, 774
1570 DATA 51,3C,32,F9,51,FE,10,F2, 1044
1580 DATA 00,52,ED,5B,F5,51,2A,F7, 1025
1590 DATA 51,01,40,60,CD,00,58,C9, 736
1600 DATA 3E,01,32,F4,51,2A,F0,51, 801
1610 DATA 22,F5,51,C3,40,52,00,00, 701
1620 DATA 5C,00,20,00,00,00,00,00, 124
1630 DATA 00,00,00,00,00,00,01,04, 5
1640 DATA 3E,00,32,F4,51,32,F9,51, 817
1650 DATA 32,F5,51,32,F7,51,C9,00, 955
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1730 DATA 5D,CD,AA,BC,C9,00,00,00, 857
1740 DATA 3E,15,CD,1E,BB,C8,C3,E8, 1124
1750 DATA 51,00,00,00,00,00,00,00, 81
1760 DATA 00,00,00,00,00,00,00,00, 0
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1850 DATA FE,01,C0,01,80,60,CD,00, 1085
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1870 DATA 00,3D,3D,32,D2,4F,FE,38, 771
1880 DATA FA,D0,52,00,00,00,00,00, 540
1890 DATA 01,80,62,CD,D0,5E,C9,00, 935
1900 DATA FE,20,FA,F0,5E,C3,C8,52, 1347
1910 DATA 00,00,00,00,00,00,00,00, 0
1920 DATA BE,FA,47,54,C3,44,54,00, 942
1930 DATA 2A,FA,4F,7E,2C,22,FA,4F, 904
1940 DATA FE,0C,F0,4F,06,00,DD,21, 845
1950 DATA 30,53,DD,09,00,C3,A0,5E, 810
1960 DATA 28,88,01,38,88,01,48,88, 722
1970 DATA 01,28,A8,01,38,A8,01,48, 507
1980 DATA A8,01,28,98,01,38,98,01, 571
1990 DATA 48,98,01,28,88,01,38,88, 594
2000 DATA 01,48,88,01,03,03,04,03, 223
2010 DATA 03,04,03,04,00,00,00,00, 14
2020 DATA 5E,67,63,44,28,51,66,53, 670
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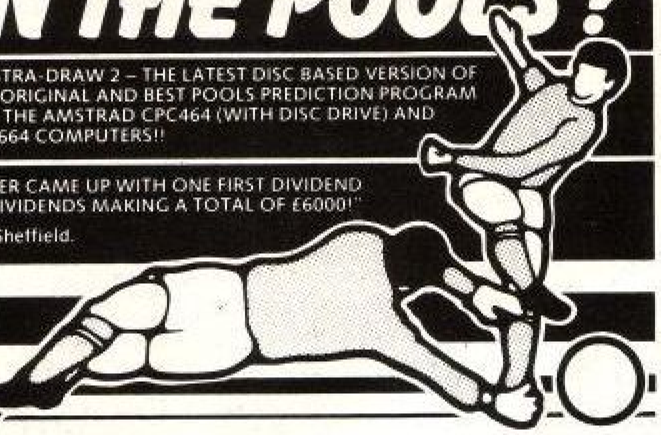
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2080 DATA 04,04,01,04,04,04,04,04, 29
2090 DATA 04,04,04,04,04,04,04,04, 32
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2120 DATA 77,10,23,7E,DD,77,20,DD, 889
2130 DATA 36,30,04,DD,23,23,05,C2, 596
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2160 DATA DD,7E,20,FE,05,FA,F3,55, 1216
2170 DATA C9,00,00,04,03,00,03,04, 215
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2190 DATA FE,0D,F0,4F,06,00,C3,1E, 817
2200 DATA 56,00,00,00,00,00,00,00, 86
2210 DATA 03,00,00,00,00,00,00,00, 3
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2400 DATA 55,C3,90,55,00,00,00,00, 589
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2430 DATA CD,C0,54,3A,FE,51,FE,00, 1128
2440 DATA C8,CD,D8,54,DD,7E,00,3C, 1112
2450 DATA DD,77,00,FE,86,F2,C0,5E, 1256
2460 DATA CD,60,57,CD,F0,54,C9,DD, 1339
2470 DATA 36,20,02,C9,CD,C0,54,3A, 828
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2490 DATA DD,7E,00,3D,DD,77,00,FE, 1002
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2520 DATA DD,35,30,C2,D0,54,3E,01, 871
2530 DATA 32,FE,51,DD,36,30,01,C9, 910
2540 DATA 3E,00,32,FE,51,C3,00,55, 727
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2560 DATA 26,00,07,80,60,CD,00,58, 556
2570 DATA C9,00,00,00,00,00,00,00, 201
2580 DATA DD,5E,00,16,00,DD,6E,10, 684
2590 DATA 26,00,CD,00,58,C9,00,00, 532
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2610 DATA 25,C2,02,55,C9,00,00,00, 519
2620 DATA CD,E0,55,3A,FE,51,C9,00, 1108
2630 DATA 00,00,00,00,00,00,00,00, 0
2640 DATA CD,00,55,C3,68,54,00,00, 673
2650 DATA 00,00,00,00,00,00,00,00, 0
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2670 DATA C0,61,CD,F0,54,DD,36,20, 1125
2680 DATA 06,C9,00,00,00,00,00,00, 207
2690 DATA CD,10,55,00,FE,00,C8,01, 761
2700 DATA 00,62,CD,F0,54,DD,36,20, 934
2710 DATA 07,C9,CD,10,55,00,FE,00, 768
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2750 DATA 54,DD,36,20,00,C9,00,00, 592
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2800 DATA 04,CC,00,56,C3,68,54,00, 805
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2860 DATA 3A,90,4E,FE,07,FA,DC,55, 1096
2870 DATA 01,00,65,C9,01,80,61,C9, 730
2880 DATA DD,35,30,C2,D0,54,3E,01, 871
2890 DATA 32,FE,51,DD,36,30,04,C9, 913
2900 DATA C3,A0,53,CD,E8,58,00,ED, 1200
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2940 DATA 2A,F0,4F,7E,2C,22,F0,4F, 884
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2970 DATA DD,7E,00,FE,05,FA,80,58, 1072
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4670 DATA 3B,22,27,5A,3C,86,84,35, 601
4680 DATA 4C,61,0C,27,22,4F,44,4C, 481
4690 DATA 38,31,78,35,32,29,4D,1D, 475
4700 DATA 7A,48,20,7D,4B,1B,17,56, 560
4710 DATA 11,86,21,15,43,84,3D,3B, 524
4720 DATA 4B,7C,67,58,37,7A,72,13, 692
4730 DATA 7C,55,7B,86,80,27,57,32, 770
4740 DATA 81,2D,3C,80,2B,3B,13,74, 599
4750 DATA 64,16,2E,7A,19,62,3F,49, 549
4760 DATA 00,57,35,19,12,6C,18,24, 362
4770 DATA 2F,5A,56,14,7D,10,4D,2A, 503
4780 DATA 74,77,4D,36,11,3C,3B,17, 525
4790 DATA 71,2A,3C,6F,20,6B,55,83, 681
4800 DATA 7D,60,7E,2A,6E,19,76,76, 760
4810 DATA 1D,57,42,41,3F,62,2A,72, 564
4820 DATA 4A,11,71,4E,3C,73,7B,82, 710
4830 DATA 17,6C,40,1B,6F,33,64,2B, 527
4840 DATA 88,98,88,88,88,88,88,88, 1248
4850 DATA 88,98,98,88,88,A8,88,A8, 1280
4860 DATA 98,98,98,88,98,88,98,88, 1216
4870 DATA A8,88,88,A8,98,98,98,88, 1248
4880 DATA 88,98,A8,98,A8,A8,98,98, 1248
4890 DATA A8,88,88,88,88,A8,A8,A8, 1360
4900 DATA 88,B8,A8,98,88,88,A8,88, 1264
4910 DATA 88,A8,A8,A8,A8,A8,A8,A8, 1360
4920 DATA 88,88,88,88,98,88,88,A8, 1136
4930 DATA 98,B8,B8,A8,B8,A8,88,88, 1312
4940 DATA 88,98,98,B8,98,98,B8,A8, 1280
4950 DATA 98,88,A8,88,A8,A8,98,98, 1232
4960 DATA B8,88,88,88,88,A8,98,88, 1184
4970 DATA 88,A8,88,88,88,98,98,98, 1168
4980 DATA 88,98,B8,88,98,B8,A8,88, 1296
4990 DATA B8,A8,88,A8,98,98,B8,88, 1280
5000 DATA A8,98,B8,B8,98,88,98,88, 1264
5010 DATA B8,B8,A8,B8,98,B8,B8,88, 1376
5020 DATA 98,A8,88,A8,98,B8,98,88, 1296
5030 DATA A8,88,B8,98,88,A8,98,B8, 1280
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5080 DATA A8,88,B8,A8,88,98,B8,B8, 1312
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5100 DATA A8,88,88,88,B8,98,A8,A8, 1296
5110 DATA 88,B8,A8,88,B8,98,88,98, 1296
5120 DATA 88,98,B8,98,88,98,98,98, 1216
5130 DATA A8,A8,98,88,B8,B8,B8,A8, 1344
5140 DATA A8,98,B8,98,A8,98,88,A8, 1280
5150 DATA A8,B8,98,88,98,88,B8,A8, 1328
5160 DATA 04,01,01,96,00,00,0F,1E, 201
5170 DATA 00,00,00,00,00,00,00,00, 0
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5190 DATA 00,00,00,00,00,00,00,00, 0
5200 DATA 81,01,00,C8,00,02,0F,00, 347
5210 DATA 00,00,00,00,00,00,00,00, 0
5220 DATA 00,00,00,00,00,00,00,00, 0
5230 DATA 00,00,00,00,00,00,00,00, 0
5240 DATA 02,01,02,00,03,00,0D,3C, 81
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5280 DATA 04,01,00,00,01,03,0F,64, 124
5290 DATA 00,00,00,00,00,00,00,00, 0
5300 DATA CD,50,5E,C3,48,50,00,00, 726
5310 DATA 00,00,00,00,00,00,00,00, 0
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5330 DATA 00,00,00,00,00,00,00,00, 0
5340 DATA 82,01,03,8C,00,00,0F,41, 354
5350 DATA 00,00,00,00,00,00,00,00, 0
5360 DATA 00,00,00,00,00,00,00,00, 0
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5430 DATA 00,00,00,00,00,00,00,00, 0
5440 DATA 21,20,5E,CD,BC,BC,3E,02, 804
5450 DATA 21,38,5E,CD,BF,BC,06,00, 773
5460 DATA 0E,00,CD,38,BC,3E,03,21, 561
5470 DATA 90,5E,CD,BF,BC,C9,00,00, 1023
5480 DATA 02,01,0F,01,19,FD,01,00, 298
5490 DATA 00,00,00,00,00,00,00,00, 0
5500 DATA 00,00,00,00,00,00,00,00, 0
5510 DATA 00,00,00,00,00,00,00,00, 0
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5530 DATA 00,00,00,00,00,00,00,00, 0
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5560 DATA 00,00,00,00,00,00,00,00, 0
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5580 DATA 21,E0,C6,3A,D5,4F,00,E5, 1034
5590 DATA F5,01,00,6B,CD,00,58,F1, 887
5600 DATA E1,01,09,00,09,3D,C2,57, 586
5610 DATA 5E,C9,00,00,00,00,00,00, 295
5620 DATA 21,D7,C6,3A,D5,4F,01,09, 806
5630 DATA 00,09,3D,C2,76,5E,01,80, 605
5640 DATA 60,CD,0B,58,3A,D5,4F,C9, 951
5650 DATA 00,00,00,00,00,00,00,00, 0
5660 DATA 02,14,FE,01,2D,01,01,00, 324
5670 DATA 00,00,00,00,00,00,00,00, 0
5680 DATA DD,22,F8,4F,DD,7E,00,32, 979
5690 DATA D1,4F,DD,7E,10,32,D2,4F, 990
5700 DATA DD,7E,20,FE,00,C8,3E,01, 896
5710 DATA 32,D0,4F,C9,00,00,00,00, 538
5720 DATA FE,8B,FA,97,54,C3,90,54, 1301
5730 DATA FE,07,F2,BB,54,C3,B4,54, 1233
5740 DATA 3A,D1,4F,5F,16,00,3A,D2, 731
5750 DATA 4F,6F,26,00,CD,00,58,C9, 722
5760 DATA 00,00,00,00,00,00,00,00, 0
5770 DATA 00,00,00,00,00,00,00,00, 0
5780 DATA CD,A0,57,3E,00,32,D0,4F, 851
5790 DATA 32,D1,4F,32,D2,4F,C9,00, 878
5800 DATA 03,02,09,2D,00,2D,33,03, 158
5810 DATA 29,27,33,2E,08,01,30,03, 237
5820 DATA 24,30,18,15,1F,08,0F,29, 224
5830 DATA 06,1C,1E,27,08,27,17,12, 191
5840 DATA 28,13,08,05,28,11,14,17, 172
5850 DATA 1C,28,2B,07,26,02,1E,19, 213
5860 DATA 1E,0D,02,1E,15,05,0E,02, 117
5870 DATA 10,0F,1F,03,08,03,0E,0E, 104
5880 DATA 0B,02,09,01,0A,12,11,08, 76
5890 DATA 16,13,2C,13,10,2C,0E,26, 216
5900 DATA 02,2F,2F,25,2D,23,21,26, 284
5910 DATA 04,2E,02,22,22,1F,24,11, 204
5920 DATA 27,30,29,16,05,1F,21,00, 219
5930 DATA 0D,1D,04,25,2B,26,2C,27, 247
5940 DATA 26,2D,1A,22,00,1F,22,2D, 253
5950 DATA 2D,18,00,03,14,03,07,2C, 146
5960 DATA 1F,09,2A,08,29,03,18,14, 178
5970 DATA 11,2E,00,2E,1F,0F,02,19, 182
5980 DATA 25,24,25,18,0C,23,05,00, 186
5990 DATA 30,22,23,1C,28,0C,24,14, 253
6000 DATA 2B,04,26,24,12,0B,09,2E, 205
6010 DATA 27,19,2D,2E,22,09,16,11, 237
6020 DATA 14,05,2B,0A,11,0A,0E,0B, 130
6030 DATA 25,01,10,26,04,17,08,17, 150
6040 DATA 0A,23,24,2D,0E,26,2F,2C, 269
6050 DATA 29,13,2E,06,28,14,19,1B, 224
6060 DATA 22,04,13,18,14,0C,26,30, 199
6070 DATA 26,02,06,00,2E,2D,17,05, 165
6080 DATA 07,04,00,11,0A,04,2A,07, 91
6090 DATA 08,21,13,16,0C,23,0F,13, 163
6100 DATA 12,1D,27,07,18,0D,2D,20, 207
6110 DATA 1A,19,2B,27,2F,2B,08,21, 264
6120 DATA 00,00,00,15,00,00,00,00, 21
6130 DATA 00,00,00,44,00,00,00,00, 68
6140 DATA 00,00,00,68,28,00,00,00, 144
6150 DATA 00,10,14,2C,3C,10,00,00, 156
6160 DATA 00,44,3C,2C,3C,6C,00,00, 340
6170 DATA 20,40,3C,04,14,68,00,20, 316
6180 DATA 88,2C,28,05,00,2C,28,88, 445
6190 DATA 7D,3E,00,AA,AA,14,7F,28, 714
6200 DATA 00,00,00,15,00,00,00,00, 21
6210 DATA 00,00,00,44,00,00,00,00, 68
6220 DATA 00,00,00,10,00,00,00,00, 16
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6240 DATA 00,00,00,10,00,00,00,00, 16
6250 DATA 00,00,00,44,00,00,00,00, 68
6260 DATA 00,00,00,10,00,00,00,00, 16
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6530 DATA 00,BA,00,00,3C,10,00,00, 262
6540 DATA 00,00,20,3C,66,88,00,00, 330
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6570 DATA 00,10,1B,33,22,2A,20,00, 202
6580 DATA 00,10,15,11,00,00,20,00, 86
6590 DATA 00,10,00,00,00,00,00,00, 16
6600 DATA 00,BA,00,00,00,00,00,00, 186
6610 DATA 00,00,20,3C,00,00,75,00, 209
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6630 DATA 00,00,66,93,66,88,00,00, 487
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6650 DATA 00,10,00,11,33,27,20,00, 155
6660 DATA 00,10,00,00,22,00,20,00, 82
6670 DATA 00,00,00,00,00,00,20,00, 32
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6770 DATA 00,00,20,88,00,88,00,00, 304
6780 DATA 00,00,00,00,00,00,00,00, 0
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6850 DATA 00,00,44,00,00,88,00,00, 204
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7050 DATA 00,00,00,20,10,00,00,00, 48
7060 DATA 00,00,00,00,88,00,00,00, 136
7070 DATA 00,00,00,00,00,00,00,00, 0
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7090 DATA 00,00,10,00,00,20,00,88, 184
7100 DATA 00,00,00,14,00,00,00,00, 20
7110 DATA 00,10,00,28,14,00,20,00, 108
7120 DATA 00,00,00,00,28,00,00,00, 40
7130 DATA 44,00,10,00,00,20,00,00, 116
7140 DATA 00,44,00,10,00,00,88,00, 220
7150 DATA 00,00,00,00,00,00,00,00, 0
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7170 DATA 00,10,00,00,28,00,00,00, 56
7180 DATA 00,00,14,00,00,14,00,00, 40
7190 DATA 88,00,00,00,00,00,10,00, 152
7200 DATA 10,00,00,00,00,00,00,44, 84
7210 DATA 00,14,00,00,00,00,28,00, 60
7220 DATA 44,00,00,28,00,20,00,00, 140
7230 DATA 00,00,20,00,88,00,44,00, 236
7240 DATA 30,30,20,38,20,38,20,38, 360
7250 DATA 34,10,34,10,34,10,30,30, 300
7260 DATA 10,20,0A,20,00,20,00,20, 154
7270 DATA 00,20,00,20,00,20,18,24, 156
7280 DATA 30,30,88,10,00,10,30,30, 360
7290 DATA 20,00,20,00,20,44,30,30, 260
7300 DATA 30,30,A8,10,00,10,00,10, 312
7310 DATA 10,30,00,10,A8,10,30,30, 360
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7330 DATA 20,20,30,30,00,20,00,02, 194
7340 DATA 30,30,20,45,20,00,20,00, 261
7350 DATA 30,30,00,10,8A,10,30,30, 362
7360 DATA 30,30,20,11,20,00,20,00, 209
7370 DATA 30,30,20,10,20,10,30,30, 288
7380 DATA 30,30,A2,10,00,10,00,20, 322
7390 DATA 00,20,10,00,10,00,51,00, 145
7400 DATA 30,30,20,10,20,10,20,10, 240
7410 DATA 60,90,20,10,20,10,30,30, 432
7420 DATA 30,30,64,98,64,98,30,30, 696
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7440 DATA 00,40,00,38,14,68,6C,38, 408
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7570 DATA 14,28,44,81,42,88,14,28, 519
7580 DATA 00,14,CC,81,42,CC,28,00, 663
7590 DATA 00,44,CC,81,42,CC,88,00, 807
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7620 DATA 00,10,15,03,03,2A,20,00, 117
7630 DATA 00,00,00,5A,A5,00,00,00, 255
7640 DATA 00,00,00,00,CF,00,00,10, 223
7650 DATA 00,00,00,CF,42,88,14,28, 469
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7770 DATA 00,10,15,81,42,94,00,00, 380
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7790 DATA 00,00,00,00,05,00,00,00, 5
7800 DATA C0,C4,CC,0C,5C,FC,33,22, 1033
7810 DATA C1,C4,46,1C,5C,54,22,22, 731
7820 DATA C1,44,02,1C,5C,54,22,00, 501
7830 DATA C0,44,02,1C,5C,54,33,10, 533
7840 DATA 00,C4,02,1C,5C,A8,22,10, 536
7850 DATA 00,C4,02,1C,5C,54,22,00, 436
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8040 DATA 00,00,00,00,00,00,00,00, 0
8050 DATA **
8060 DATA 42725,44047,42128,44066,43436,
     40597,37961,33526,328486
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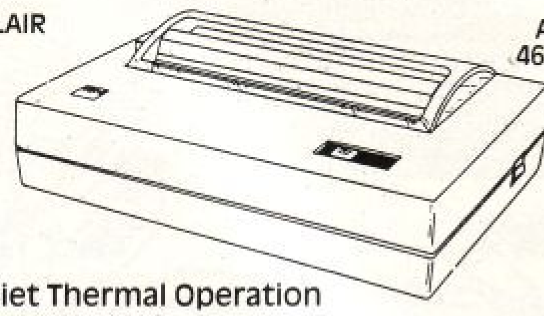
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The Least Significant Bit

As one who was heavily associated with the Amstrad camp until recently, your scribe took his life in his hands and decided to gatecrash the Sinclair Research bash being held for the benefit of software and distribution trade in the academic surrounds of Magdelane College Cambridge. (Pronounced 'Mawdlin').

Bearing in mind Sir Clive's 1985 Christmas reputation where discourse with members of the commercial opposition was concerned, it could have been dangerous. But no, neither he nor MD Bill Jeffries could make an appearance, so the whole event took on the air of a Jolly Good Christmas bash, complete with crackers that spilled silver stars and glitter all over the assembled throng's smoked salmon starters, party poppers (one hesitates to use the expression 'party bangers') and balloons that made rude noises and frightened all those who were just about to nod off in an alcoholic daze.

Seeing Stars

A special mention here for Stuart Armstrong at Triptych Publishing (Project Planner, Star Watcher etc), who sat patiently by while an unnamed Sinclair executive with a shade too much of the old Xmas Spirit rubbed butter over his glasses, in order to make the glitter and stars stick better.....

A man from BT was utterly outraged during a discussion on the sinking of the Belgrano (Nick Alexander of Virgin was there, and he's 'into' politics) when I suggested that we might have bombed the mainland for good measure. No sense of fun, some people. It was only afterwards I remembered about the 'sinking of the Fray Bentos' game on Prestel about the time of the affair in question.

Yes, some of the representatives of major software houses were still depressingly wrapped up in their own startling importance, and only one or two showed the sort of sense of humour we'll all need to survive in 1986.

The Dregs

The whole event was quite delightful, and an example of English hospitality at its finest. After the Christmas Dins, a student's revue trio called the 'Dregs' performed a very promising act - and these are undoubtedly the next generation of Rowan Atkinsons in the making. Watch out for them.

Absent Friends & Sour Grapes

In the end, the Sinclair brass kept a low profile (whether by luck or judgement is not clear) and allowed the mainstay managers to have their own show, which, in a business that is personality obsessed, was most refreshing, even if it was unintentional. If this industry is to go forward, it's about time some of the media's chosen front men kept their heads down.

From a guest list of some 120 (everyone who had bought a QL), the fact that around 117 actually turned up is quite astonishing, and a large vote of thanks is due to the man at Commodore who spread a rumor that a new machine was to be launched during the celebration. Nevertheless, no new machines appeared, and everyone seemed actually rather pleased that the event was purely social. After a year like 1985, few present could stand any more excitement just yet.

I was thoroughly pleased to have made the trip, and eternally grateful for not being thrown out as summarily as I might have been. It more than made up for not being invited to the Amstrad Christmas binge.

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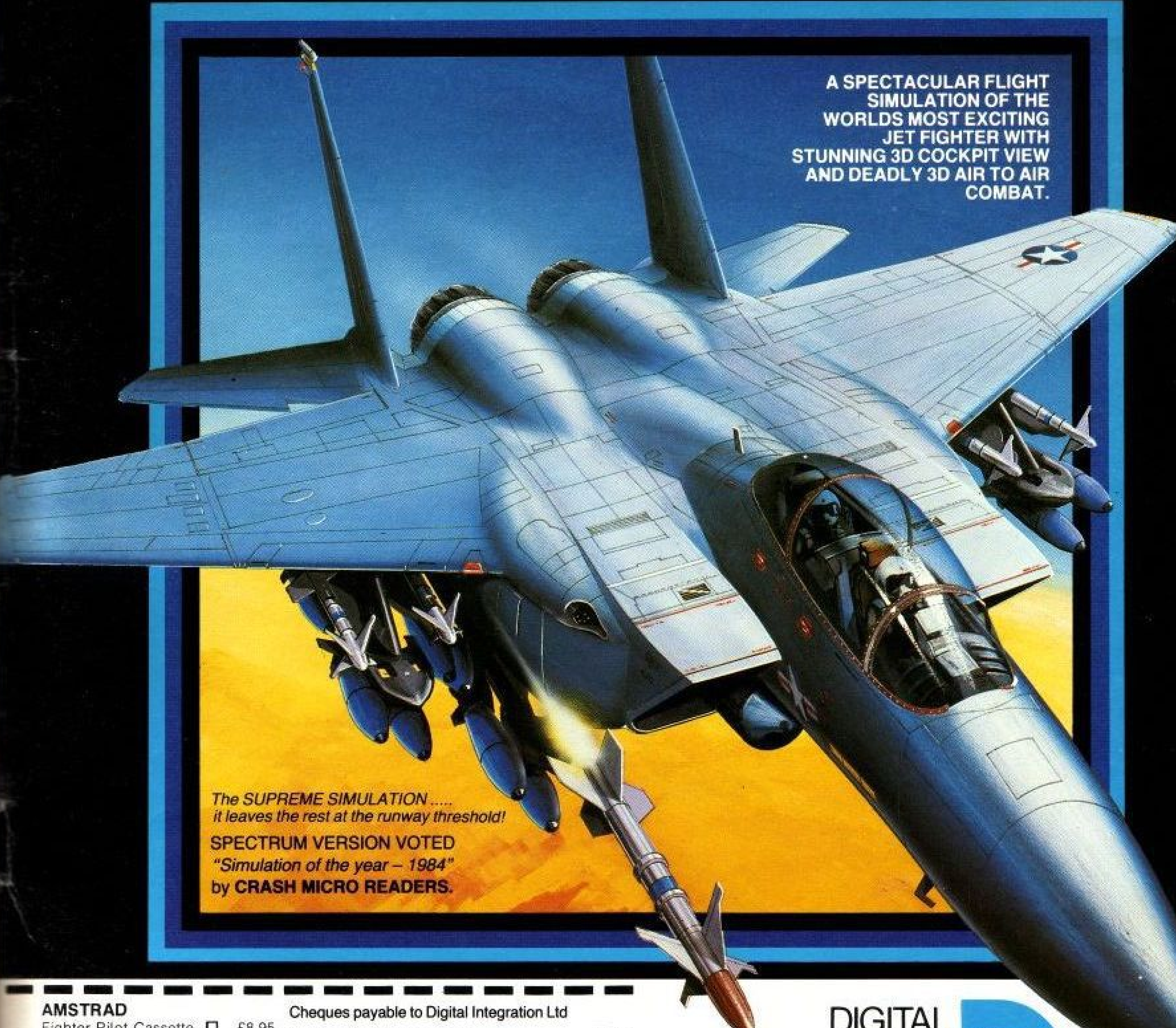
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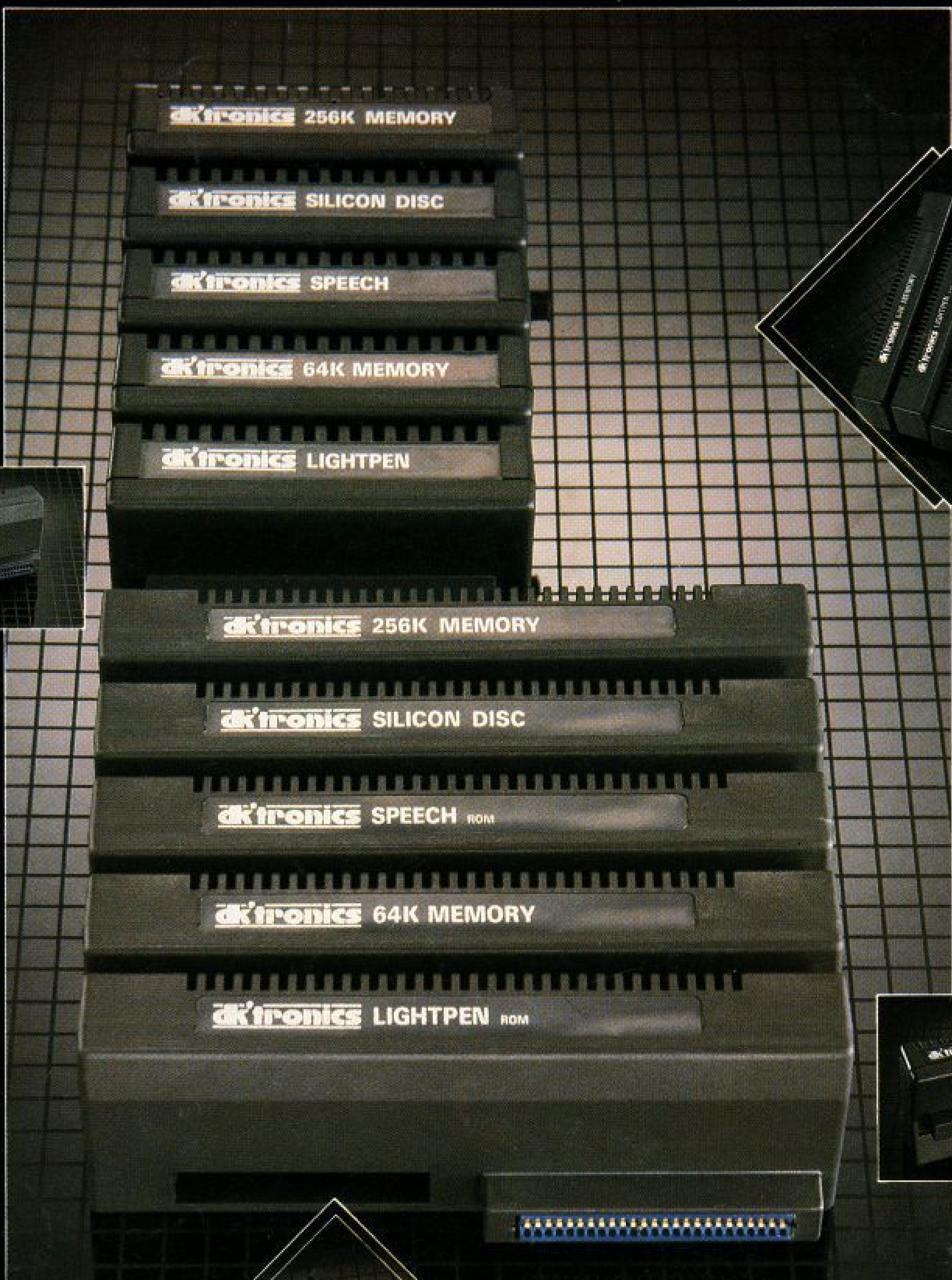
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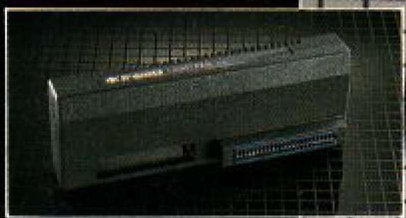
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